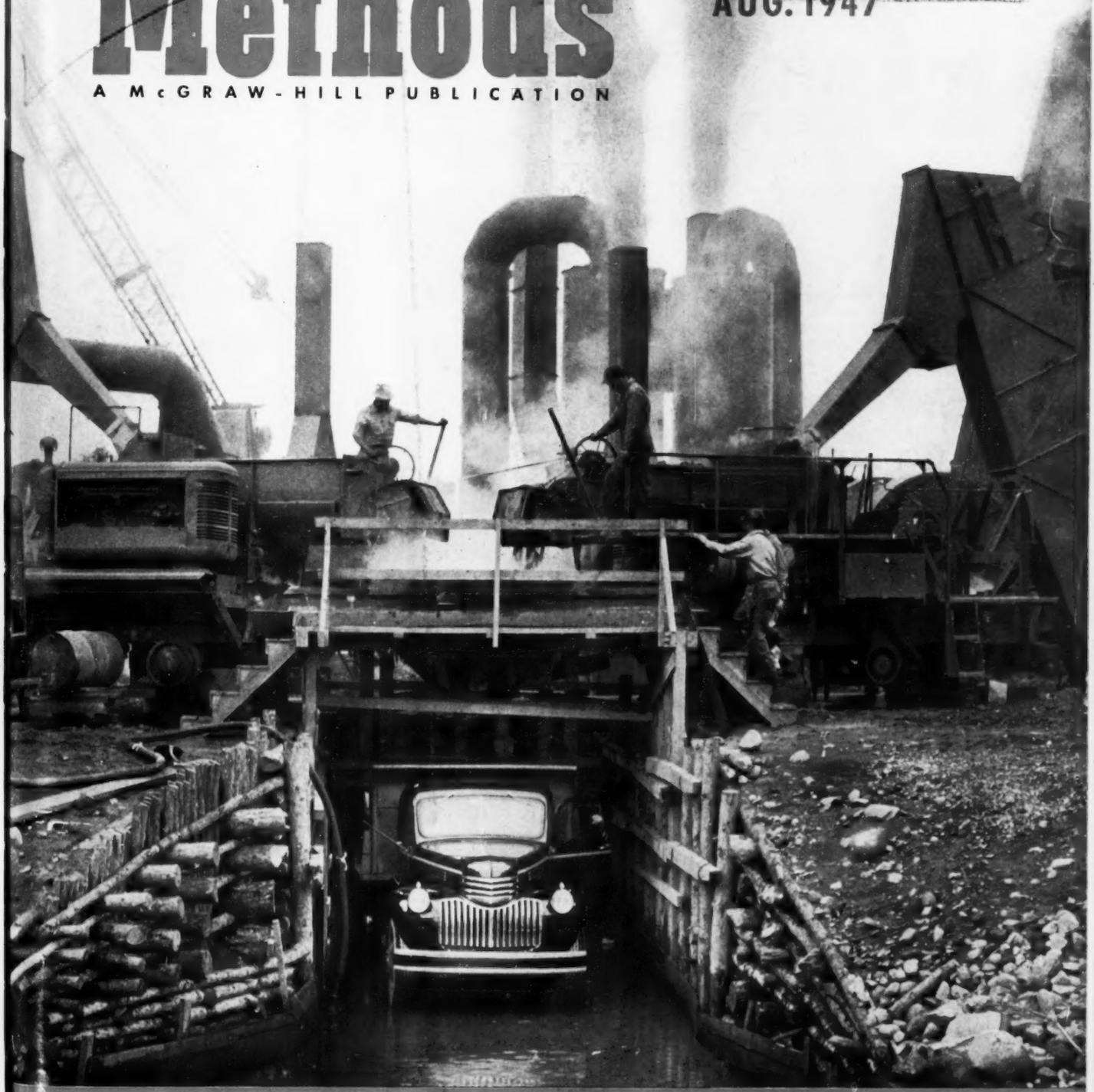
...LOGY DEPARTMENT

Construction Methods

LIBRARY
AUG 13 1947
DETROIT

AUG. 1947

A McGRAW-HILL PUBLICATION



Twin continuous mixing plants pour out asphaltic concrete for Maine Turnpike pavement.

Calyx Drill Cuts Dropshafts for Peruvian Hydro Project • Fast Paving on Maine Turnpike • Barker Dam Face Grouted Under Water • Versatile Piledriver on Garrison Bridge Job

See for yourself why HI-BOND is a Better Reinforcing Bar

its Helical Ribs provide Greater Bond and Mechanical Grip

Examine a piece of Hi-Bond reinforcing bar. Notice the closely spaced, deeply corrugated, double helical ribs. This unique ribbed construction means greater adhesion and mechanical grip.

More Efficient Use of Steel Hi-Bond bars utilize the strength of the steel more fully through improved transfer of stresses. They therefore provide a more efficient structure.

Reduces Width of Cracks Hi-Bond's high resistance to slip reduces the width of tensile cracks in the concrete. This not only protects the steel from corrosion but avoids the unsightly appearance of large cracks.

Easier to Tie The ribs of Hi-Bond bars interlock with each other when placed side by side or at right angles, and provide a firm anchorage for the tie wires. Only one strand of wire is needed to make a firm joint—saving labor costs.

Unfortunately the present demand for Hi-Bond bars greatly exceeds the supply. To make larger tonnages available to you, other steel companies have been licensed to make this superior bar.

Examine a piece of Hi-Bond. We will be glad to send a sample for your inspection.

Write for HI-BOND Bulletin

INLAND HI-BOND REINFORCING BARS

INLAND STEEL

INLAND STEEL COMPANY
38 South Dearborn St., Chicago 3, Ill.
Offices: Detroit, Indianapolis, Kansas City, Milwaukee, New York. St. Louis, St. Paul

A. E. PAXTON, *Publisher*

Construction Methods

WALDO G. BOWMAN, *Editor*

THE CONSTRUCTION MAGAZINE WITH PICTURE POWER

Established 1919

HAROLD W. RICHARDSON, *Executive Editor* ROBERT K. TOMLIN, *Managing Editor*

New York: Nelle Fitzgerald • Patricia McGerr • Henry T. Perez. *Chicago:* Vincent B. Smith. *Cleveland:* J. Roland Carr

San Francisco: N. A. Bowers • L. L. Wise *Washington:* A. N. Carter

Foreign News Bureaus: London • Paris • Berlin • Prague • Moscow • Shanghai • Bombay • Mexico City

AUGUST 1947 Volume 29 • Number 8

CUTS AND FILLS

CONTRACTORS with imagination — and guts—will be interested in the first stage of construction at Garrison Dam on the Missouri River in North Dakota, for which bids will probably be called in September. Included in the first stage will be excavation of two big holes—and we mean big—at the west or right abutment for the intake structures and power house. Ranging from 100 to 190 ft. deep, these holes each require some 3,000,000 cu. yd. of excavation. Another million yards of pervious material comes out of a small section of the intake channel, and the entire 7 million yards will go into the west end of the main embankment (leaving only 68 million yards for future contracts). Original plans for open-cut-and-cover conduits for diversion and outlet works through the abutment have been changed to seven 37-ft. tunnels 1,100 ft. long. Under the first contract a 300-ft. test tunnel will be driven along the line of one permanent tunnel, reached by an access tunnel, to determine the loads on the lining as a guide in final design of the tunnels. Another item in the first contract will be driving 54½ miles of steel sheet pile cutoff wall on both sides of the river.

Here is a job where contractors can really show their ingenuity. The big holes will be wet, for they tap water-bearing lignite seams. Pumping, grouting and drainage channels are all in the picture. Belt conveyor or drag conveyor removal of spoil is a possibility. The cutoff wall warrants deluxe pile driving rigs. Time limits of 210 days for the tunnel and 420 days for the excavation and embankment will call for operations and equipment comparable to those required for the remainder of the work. Looks as if this is a chance to get in on the ground floor of the biggest rolled-fill dam ever built. Builders don't need to feel slighted, for bids will also be called soon for the permanent town of Riverdale at the dam site. This will be about a $6,000,000 job.

PLANS for the first-stage construction at Garrison Dam were revealed at conferences with contractors called by Col. W. W. Wannamaker, U. S. District Engineer in charge of the project, at Bismarck the week of July 21. Contractors were briefed on the various features, then were taken over the site by competent and informed guides, and finally were returned to the District office for questioning as to any changes or suggestions they might have. This was a fine idea—prebidding informal conferences where engineers and contractors meet on common ground to discuss procedures in building one of the country's greatest dams.

IN THESE DAYS of high construction costs too much emphasis cannot be placed on designing for economical construction. Forrest W. Parrott, A.G.C. national president, again stressed this point in addressing the A.S.C.E. at their recent Duluth convention. He urged design based on utmost use of mechanized equipment and elimination of all possible handwork, cutting out of all useless frills and simplifying form construction. He cited his firm's refusal to bid recently on a bridge out west where complicated form work on what should have been a simple structure ran the cost of concrete up to $275 per cu. yd. Engineers, too, have a responsibility to the public and owners to keep construction costs down through sensible design.

IN THIS ISSUE

BIG CALYX DRILL sinks 1,400-ft. holes	78
LOADER AND SHOVEL lick hardpan at Boston Airport	82
ASPHALT PAVING on Maine Turnpike hits fast pace	84
CITED FOR SERVICE . . . Frank W. Barnes	89
DAM FACE is grouted against hydrostatic pressure	90
LEGAL ADVENTURES of Tractor Conn	93
NEWS REEL of construction	94
BRIDGE PILES are driven with all-position leads	96
FLOATING CRANE clears out bridge and ship debris	99
HOW THEY DID IT . . . Construction details	100
PRELIMINARY WORK gets under way at Union Falls Dam	102
HYDRAULIC EARTHMOVER cuts clean ditches	105
RAILROAD SPAN is skidded to new site	108

McGRAW-HILL PUBLISHING COMPANY, INC. • 330 WEST 42nd STREET, NEW YORK 18, N. Y.

JAMES H. McGRAW, *Founder and Honorary Chairman*

Editorial and Publishing Offices: 330 West 42nd St., New York (18); District Managers and Branch Offices: Fred G. Hudson and L. H. Hunt, 520 N. Michigan Ave., Chicago 11; 738-39 Oliver Building, Pittsburgh J. W. Otterson, 68 Post St., San Francisco 4; Aldwych House London, W. C. 2, England; Washington: J. M. Spackman, New York: A. B. Cozzens, Philadelphia: E. E. Duff, Jr., Cleveland: B. F. Horn, Detroit: W. E. Donnell, St. Louis: R. N. Phelan, Los Angeles: W.G. Payne, Boston: Ralph Maultsby, Atlanta, Ga.

James H. McGraw, Jr., President; Curtis W. McGraw, Senior Vice-President and Treasurer; Joseph A. Gerardi, Secretary; Eugene Duffield, Editorial Assistant to the President; Nelson Bond, Director of Advertising; J. E. Blackburn, Jr., Vice-President, Director of Circulation.

CONSTRUCTION METHODS, August, 1947. Volume 29, Number 8. Published Monthly, price 25c a copy.

Return Postage Guaranteed. Allow at least ten days for change of address. All communications about subscriptions should be addressed to the Director of Circulation, 330 West 42nd Street, New York (18), N. Y.

Subscription rates—United States and possessions, $2.00 a year, $3.00 for two years, $4.00 for three years. Canada, $3.00 a year, $5.00 for two years, $6.00 for three years. Pan American countries, $6.00 for one year, $10.00 for two years, $12.00 for three years. All other countries, $15.00 a year, $30.00 for three years. Please indicate position and company connection on all subscription orders. Entered (or reentered) as second class matter December 16, 1936, at the Post Office of New York, N. Y., U. S. A., under the act of March 3rd, 1879. Printed in U. S. A. Cable address: "McGrawhill, New York." Member of A.B.P.

Member of A.B.C. Contents copyrighted 1947 by McGraw-Hill Publishing Co., Inc., 330 W. 42nd St., New York (18), N. Y. All rights reserved.

It sure gave
us
a lift!
OLIVER
Cletrac
SALES
SERVICE
"THE SIGN
OF EXTRA SERVICE"

• There's more than one way to load out trucks, but I never saw one that could beat this. We thought we used to do pretty well until our Oliver "Cletrac" dealer happened to drop in one day.

"Look," he said, "you're doing a good job of dirt moving, but here's a way to give the job a real lift. Put a new Drott Hi-Lift shovel on those Cletracs of yours and watch the dirt fly. You see, this unit strips, scoops, carries, and dumps the dirt into your trucks. The deep shovel gets a full load every time . . . doesn't spill. It's pivoted so you can't help but get a bigger load and that means faster, more economical operation."

His suggestion gave our production a real lift. The Oliver "Cletrac" dealer sure knows his business and is a big help in ours.

Cletrac

a product of

The OLIVER Corporation

Industrial Division: 19300 Euclid Avenue, Cleveland 17, Ohio

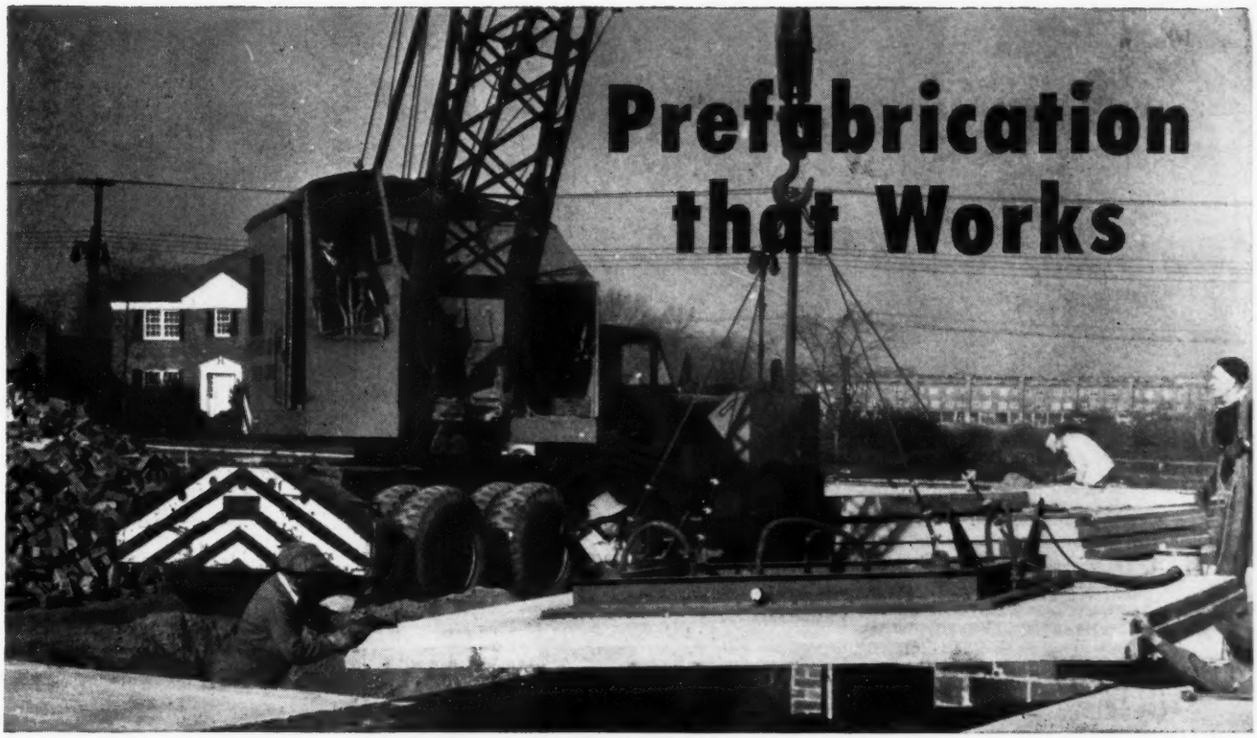
THE JOB JESTER

CARTOONS DRAWN FOR CONSTRUCTION METHODS

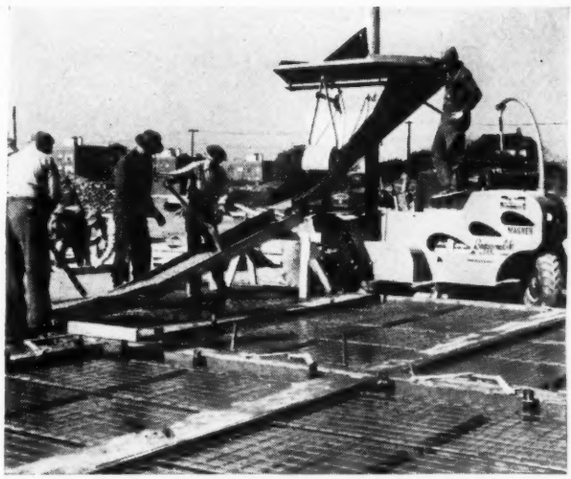
"Let's stop on this one and begin on the annex."

"My false teeth are getting awfully loose—I've bitten myself ten times today."

"On guard!"



PRECAST CONCRETE FLOORS PROVIDE UTMOST FIRE-SAFETY AT MINIMUM COST IN 110-BUILDING U.N. HOUSING PROJECT



• Floor slabs for Parkway Village, 110-building U. N. housing project, Jamaica, L. I., are cast at job in molds of 'Incor' concrete. Slabs are vacuum treated and lifted by vacuum lifting frame day after pouring. With 7¼-bag 'Incor' mix, cylinders are testing over 8000 lbs. psi. at 28 days.

• Parkway Village, Jamaica, N. Y. Owner: Savings Banks Trust Company, representing a number of participating Mutual Savings Banks. Architects: Leonard Schultze and Associates; Engineers: Madigan-Hyland; Contractor: George A. Fuller Company, all of New York City.

HERE is construction history in the making. The project is Parkway Village, 110 well-designed, garden-type, apartment buildings for United Nations personnel, at Jamaica, L. I. Floors are reinforced concrete slabs, up to 14 x 14 ft. in size—a total of 6800 slabs precast at the job in 115 'Incor' concrete molds. Ribs in floor slabs, running in two directions, share the load; so the floor system averages only 2½ in. thick, including beams, slabs and girders, and uses only about half as much concrete and steel as conventional construction.

Dependable high early strength with 'Incor'* 24-Hour Cement makes it possible to lift slabs day after pouring, for lowering onto concrete foundations and walls. This method of floor construction provides stability, fire-safety and low upkeep of good concrete at minimum cost—and has great possibilities for industrial as well as residential buildings.

*Reg. U.S. Pat. Off.

LONE STAR CEMENTS MEET EVERY CONSTRUCTION NEED

LONE STAR CEMENT CORPORATION

Offices: ALBANY • BETHLEHEM, PA. • BIRMINGHAM • BOSTON • CHICAGO • DALLAS • HOUSTON • INDIANAPOLIS • JACKSON, MISS. KANSAS CITY, MO. • NEW ORLEANS • NEW YORK • NORFOLK • PHILADELPHIA • ST. LOUIS • WASHINGTON, D. C.

LONE STAR CEMENT, WITH ITS SUBSIDIARIES, IS ONE OF THE WORLD'S LARGEST CEMENT PRODUCERS: 15 MODERN MILLS, 25,500,000 BARRELS ANNUAL CAPACITY

Barber-Greene

does the *"IMPOSSIBLE"* — automatically!

After you've watched any or all other finishers at work, see the B-G Tamping-Leveling Finisher! Alone among them all the B-G Finisher *automatically* measures the correct amount of compacted material and produces a level surface of uniform density—*a surface that is smooth and level, regardless of irregularities of the sub-grade.*

You might well have thought this an "impossible" job but it is only one of many features of B-G Finisher performance. It has a simple crown adjustment—places adjacent strips with no ridges at the joint. It handles any mix—hot or cold. Flexible, maneuverable and economical to operate, it offers outstanding performance from every standpoint.

BARBER-GREENE COMPANY · AURORA, ILLINOIS

Constant Flow Equipment

EUCLIDS "KEEP COMING BACK FOR MORE"

Because of the body design and method of dumping, Rear-Dump Euclids will handle all types of material. High dumping angle assures clean shedding of the load . . . distance from rear wheels to chute facilitates dumping over the bank, into hoppers or on the fill. Payload capacity is 30,000 lbs. . . . top speed loaded is 21.8 m.p.h. . . . 150 to 190 h.p. diesel engine.

Bottom-Dump Euclids are built for off-the-highway hauling of earth, ore, sand, gravel and other free flowing materials. Low loading height and wide top area provide an easy target for the loading unit. Capacity is 13 cu. yds. struck measure (40,000 lbs. payload) . . . loaded top speed is 26 m.p.h. . . . 150 to 190 h.p. diesel engine.

BOTTOM-DUMP and Rear-Dump Euclids are engineered for the job . . . built for efficient, long-life performance in off-the-highway service. Built by the pioneer of large capacity high-speed hauling equipment, Euclids have earned their reputation for rugged staying power, low cost production and continuous operation on hundreds of tough jobs. From bumper to bumper every part is designed and constructed for long life in heavy duty, off-the-highway hauling of earth, rock, coal, ore and other materials.

Ability of Euclid equipment to "keep coming back for more" means greater profits to owners by keeping operating and maintenance costs down. This dependable performance results in lower cost per ton or yard of material moved. Your Euclid Distributor or Representative will be glad to provide complete information on models best suited to your hauling needs.

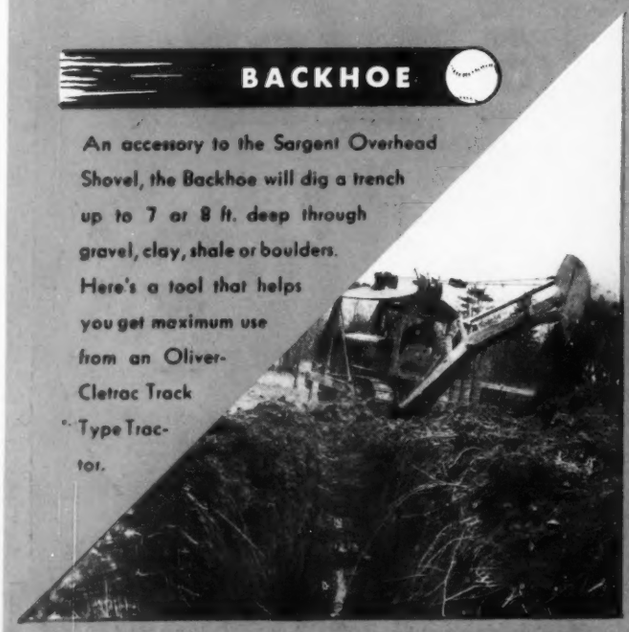
The EUCLID ROAD MACHINERY Co., Cleveland 17, Ohio

EUCLIDS *Move the Earth*

A GREAT UTILITY FIELDER . . .

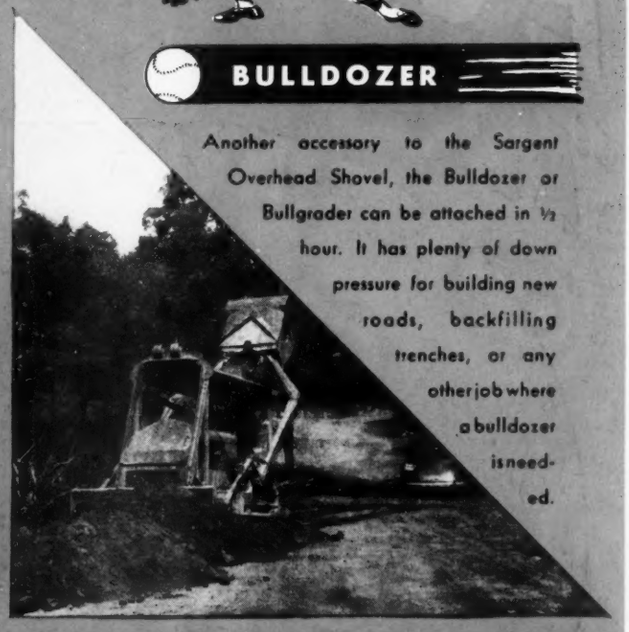
BACKHOE

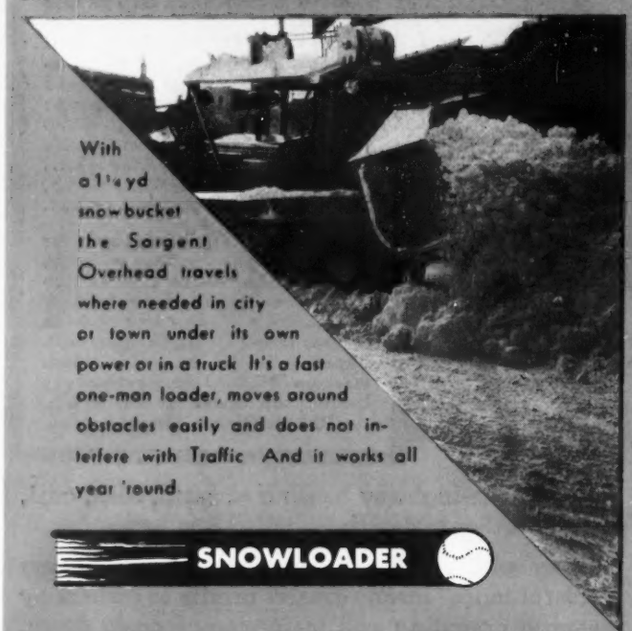
An accessory to the Sargent Overhead Shovel, the Backhoe will dig a trench up to 7 or 8 ft. deep through gravel, clay, shale or boulders. Here's a tool that helps you get maximum use from an Oliver-Cletrac Track Type Tractor.



BULLDOZER

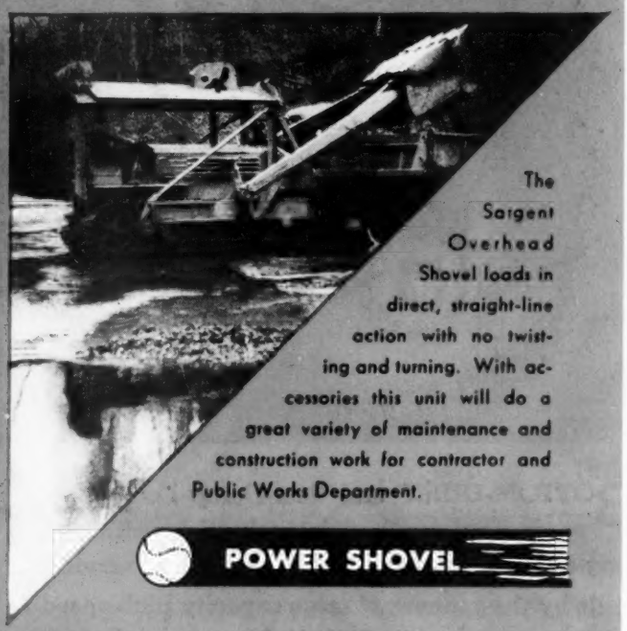
Another accessory to the Sargent Overhead Shovel, the Bulldozer or Bullgrader can be attached in ½ hour. It has plenty of down pressure for building new roads, backfilling trenches, or any other job where a bulldozer is needed.





With a 1¼ yd snow bucket the Sargent Overhead travels where needed in city or town under its own power or in a truck. It's a fast one-man loader, moves around obstacles easily and does not interfere with Traffic. And it works all year 'round.

SNOWLOADER



The Sargent Overhead Shovel loads in direct, straight-line action with no twisting and turning. With accessories this unit will do a great variety of maintenance and construction work for contractor and Public Works Department.

POWER SHOVEL

For Full Information Contact Your Oliver-Cletrac Dealer

GOOD IN ANY POSITION ON THE DIAMOND

The SARGENT OVERHEAD

MADE BY MAINE STEEL INC., S. WINDHAM, ME.

The tire that grips and floats now has even greater bruise resistance!

THIS special B. F. Goodrich tire helps save two ways on excavating and dumping operations. *Miring* in mud, sand, loam and loose dirt costs the time of men and equipment. *Bruising*, from tire impacts on ruts, boulders, timbers, etc., leads to ply separation and blow-outs—again, lost time for men and machines; costly tire repairs.

B. F. Goodrich engineers solved the miring problem with tires such as the Super Traction . . . tires with wider, flatter tread for maximum flotation. The Super Traction tire is built to grip, *and float!*

Answer to problem number two is the *double shock shield* now used in B. F. Goodrich off-the-road tires. The double shock shield consists of four layers of *nylon* cord between the tread and the plies. These nylon layers are in pairs, cords in each pair running at scientifically determined angles to the cords of the other pair to give balanced strength.

The strong, elastic nylon cords in each layer run parallel, fully insulated in live rubber. Under impact, the cords in the shields stretch together, *not* across each other, and return to their original position. Because of this principle, sharp impacts are *distributed*, absorbed . . . the rayon cord body is shielded from shock!

No other make of tire gives you the added protection of the double nylon shock shield... added savings through: (1) longer tire life, (2) more recappable tires, (3) increased bruise resistance, (4) less danger of tread separation.

Find out how B. F. Goodrich can help save you money on tires. See the B. F. Goodrich dealer or write us direct. *The B. F. Goodrich Company, Akron, O.*

Truck Tires BY

B.F. Goodrich

JUST PUSH THE BUTTON

SCHRAMM

Making Air Compressors is the specialized job of Schramm Inc. and has been for the past half century.

When new and advanced features of design that make for improved air compressor service are introduced—you may be sure that they are introduced by Schramm Inc.

Take for example, the electric built-in starting feature of Schramm compressors. No cranking, no injuries; and air in a minute . . . Just touching the button puts your men and tools to work at once.

Other exclusive Schramm Air Compressor features include (1) 100% water cooled (2) Compact—lightweight (3) Mechanical intake valve (4) Forced feed lubrication.

SCHRAMM INC. THE COMPRESSOR PEOPLE
WEST CHESTER, PA.

EASY OPERATION

• • •

This is all there is to the "feather-touch" clutch control

less operator fatigue

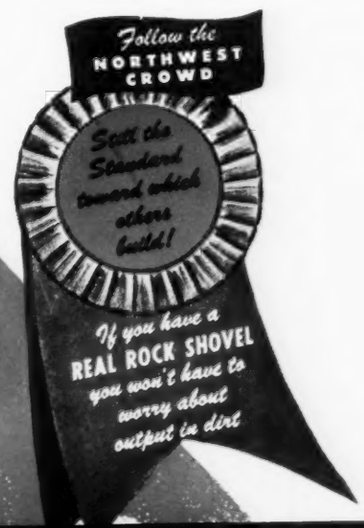
"feel" of the load

unaffected by weather

Here is all you need for easy operation!—A simple device—free from high-pressure pumps and tubing—no delicate mechanisms—nothing to refill—unaffected by weather or temperature—simple, positive, dependable and proved in years of service—that's the Northwest "Feather-Touch" Clutch Control on the main drums.

The *feel of the load* is always present. The clutch action is in direct ratio to the movement of the operator's hand lever, release is positive and *there is no danger of shutdown because of control failure.*

Easy operation is one of the secrets of high output. It means less fatigue, greater safety and better control of the load that pays out in handling the big ones, setting steel or stone and spotting to trucks or bins. Better plan to have it! Let us send full details so you can follow the Northwest Crowd.



NORTHWEST ENGINEERING COMPANY
1503 Field Bldg., 135 South La Salle Ave., Chicago 3, Ill.

NORTHWEST

SHOVELS • CRANES • DRAGLINES • PULLSHOVELS

TAKE THE "ILL" OUT OF DRILL

SURE cure for a drill's "ills" – drill doctors say – is *effective lubrication.* Use Texaco Rock Drill Lubricants (E.P.), and your drills will stay in peak condition longer, require less servicing, cut greater footage at lower cost.

Texaco Rock Drill Lubricants (E.P.) have "extreme pressure" characteristics – give all moving parts full protection against wear. They resist oxidation, always flow readily, prevent rust and corrosion whether drills are running or idle.

Leading rock drill manufacturers approve Texaco Rock Drill Lubricants (E.P.) because they meet the lubrication requirements of every type of drill design and operating condition.

For Texaco Products and Lubrication Engineering Service, call the nearest of the more than 2500 Texaco distributing plants in the 48 States or write:

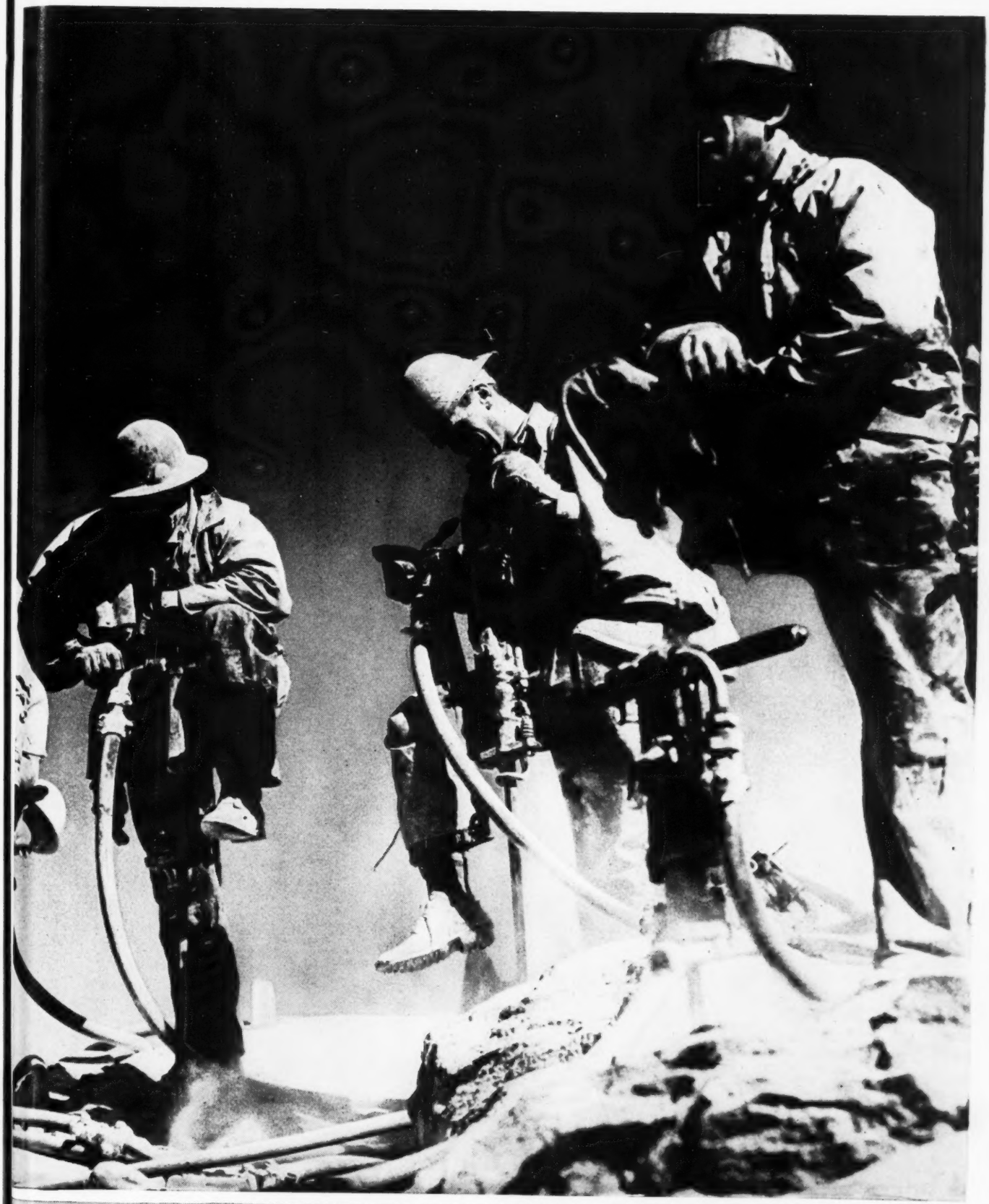
The Texas Company, 135 East 42nd Street, New York 17, New York.

PROTECT COMPRESSORS, TOO! Get more efficient, economical compressor operation by lubricating with the recommended *Texaco Alcaid, Algol or Ursa Oil.* All these famous oils prevent hard carbon formations – keep rings free, valves active, ports and air lines clear. Use them to keep pressure up, costs down.

Tune in . . .
TEXACO STAR THEATRE
presents the
TONY MARTIN SHOW
every Sunday night.
See newspaper for
time and station.

TEXACO

TEXACO



Rock Drill Lubricants (E.P.)

Thousands of tests, under all kinds of service conditions, prove that "Dutch Boy" Red Lead gives metal extra protection

4 Ways RED LEAD RESISTS EFFECTS OF WATER ...guards against Rust

Maintenance engineers have long recognized Red Lead as the "standard" metal protective paint. This acceptance is based, to a great extent, on its marked ability to stand up against moisture, a powerful factor in the rusting process.

Now, scientific research into the inherent properties of the pigment itself, shows just how and why Red Lead resists the effects of water. Briefly, there are four reasons:

1. Red Lead resists water "pick-up"—If a series of various metal protective paint films are weighed and then submerged in water (salt or fresh), it is readily noticed, on reweighing after several days immersion, that Red Lead films have outstanding resistance to the absorption, or "pick-up," of water.

Testing Water Permeability of Paint Films—*With this standard apparatus a measure of the amount of water that passes through a unit of film is obtained.*

Experiments show that a straight linseed oil film allows three times as much water to pass through the film as when the same film is pigmented with Red Lead.

2. Red Lead resists passage of moisture—Rusting of metal will not take place if water does not penetrate the paint film to reach the metal. Water permeability tests of paint films (see illustration at lower left) show, beyond question, that Red Lead is one of the most effective metal protective pigments, because of its stubborn resistance to the passage of moisture through the film.

3. Red Lead resists solution by water—The action of water on paint films results in a partial dissolving of the film. Many metal protective films lose a considerable percentage by weight of their films through solution in water. On the other hand, the solubility losses of Red Lead paint films are practically negligible.

4. Red Lead resists distortion by water—Red Lead films have little tendency to shrivel or change in size during immersion in water. This is imperative to good metal protection. For good protection depends on good adhesion, and a paint film maintains better adhesion when it is not distorted by the action of the water.

Remember, too, Red Lead is compatible with practically all vehicles commonly used in metal protective paints, including many of the fast-drying resin types.

Specify RED LEAD for ALL Metal Protective Paints

The rust-resistant properties of Red Lead are so pronounced that it improves any metal protective paint. So, no matter what price you pay, you'll get a better paint if it contains Red Lead.

* * *

The benefit of our extensive experience with metal protective paints for both underwater and atmospheric use is available through our technical staff.

NATIONAL LEAD COMPANY: New York 6; Buffalo 3; Chicago 8; Cincinnati 3; Cleveland 13; St. Louis 1; San Francisco 10; Boston 6, (National Lead Co. of Mass.); Philadelphia 7, (John T. Lewis & Bros. Co.); Pittsburgh 30, (National Lead Co. of Pa.); Charleston 25, W. Va., (Evans Lead Division).

DUTCH BOY
Reg. U.S. Pat. Off.
RED LEAD

There's AN INGRAM FOR EVERY JOB!

5 Sizes....

4 to 12 Tons

See Your Distributor —

ALABAMA—Birmingham
Equipment Service Company
ARIZONA—Phoenix
Mitchell-Kennedy Equipment Co.
ARKANSAS—Little Rock
Kern-Limerick, Inc.
CALIFORNIA—Los Angeles
Shaw Sales & Service Co.
COLORADO—Denver
Constructors Equipment Co.
CONNECTICUT—Bridgeport
The Arnold Company
DISTRICT OF COLUMBIA—Washington
John L. Seward Co.
FLORIDA—Jackson & Miami
Florida-Georgia Tractor Co.
FLORIDA—St. Petersburg
C. G. Hewitt Machinery
GEORGIA—Atlanta
Statham Mach. & Equipment Co.
GEORGIA—Waycross
Florida-Georgia Tractor Co.
IDAHO—Boise
The Sawtooth Co.
ILLINOIS—Chicago
L. Z. Howell Co.
INDIANA—Indianapolis
Flesch-Miller Tractor Co.
KANSAS—Wichita
Phillips & Easton Supply Co.
KENTUCKY—Lexington
Sheppard & Bogie Equipment Co.
LOUISIANA—Baton Rouge
Dunham-Pugh Co., Inc.
MARYLAND—Silver Spring
R. S. McCeney
MINNESOTA—St. Paul
Construction Equipment Sales, Inc.
MISSISSIPPI—Amory
Dalrymple Equipment Co.
NEW JERSEY—Newark
North Jersey Equipment Co.
NEW MEXICO—Albuquerque
Harry Cornelius Co.
NORTH CAROLINA—Raleigh
North Carolina Equip. Co.
OHIO—Cleveland
George P. Williams Co.
OKLAHOMA—Oklahoma City
R. C. Hardcastle Co.
OREGON—Portland
Contractors Equipment Corp.
PENNSYLVANIA—Pittsburgh
Conte Equipment Corp.
TENNESSEE—Knoxville
Power Equipment Co.
TENNESSEE—Memphis
Road Builders Equip. Co.
TENNESSEE—Nashville
Buchanan & Rooney Equip. Co.
TEXAS—El Paso
Equipment Supply Company
TEXAS—San Antonio
Acme Wire & Iron Works
UTAH—Salt Lake City
Rasmussen Equip. & Supply Co.
VIRGINIA—Richmond
Bemiss Equipment Corp.
WASHINGTON—Seattle
Service Equipment Co.
WASHINGTON—Spokane
Inland Truck & Diesel Co.
WISCONSIN—Milwaukee
Dimond-Colloton Equip. Co.
WYOMING—Cheyenne
Wilson Equip. & Supply Co.

YOUR rolling job—large or small—can be done *Better* and *more profitably* with an Ingram.

That's because each Ingram is built to exacting requirements in every model. Every Ingram Roller has the *right* engine unit for ample, yet economical power. And no feature has been overlooked to make the Ingram easy on your operator.

That means *more* and *better* rolling for YOU!

Ask your Ingram distributor to show you the roller that fits *your* needs. Let him show you how the shorter wheelbase increases maneuverability—the positive control steering eliminates "jiggling"—how the fully enclosed mechanism reduces breakdowns. It all adds up to *increased rolling profits*—so see your distributor now!

INGRAM ROLLERS

ACME WIRE & IRON WORKS SAN ANTONIO, TEXAS

LIFTING CAPACITY UP 50%

When You Mount KOEHRING ON RUBBER

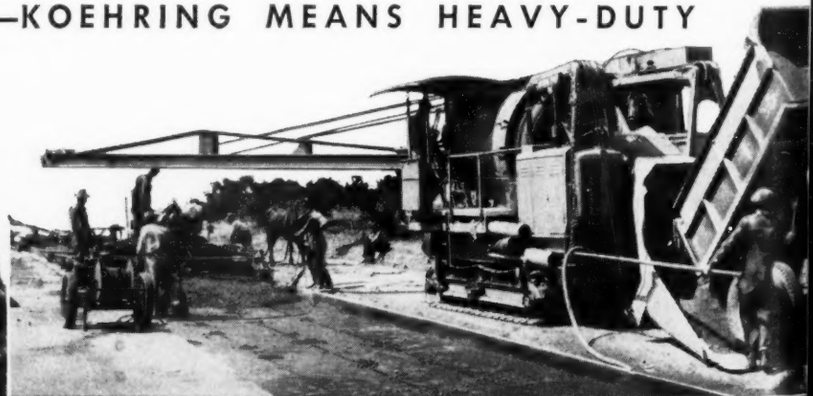
High lifting capacity of the Koehring 304 goes up to 40,000 lbs., is increased by 8½ tons over crawler mounted capacity, when the 304 is mounted on the Koehring Truck Crane Chassis. Lifting Capacity of the Koehring 205 Truck Crane is up proportionately, to 20,000 lbs. Koehring 304 Cruiser Crane (one-man operated, rubber mounted) lifts 29,000 honest pounds. Koehring 205 Cruiser lifts 14,500 lbs.

Safely stepping up lifting capacities as much as 50% over crawler capacities is possible only because every Koehring base machine is designed with more than ample reserve strength. Big safety factors enable you to turn every bit of extra stability gained in rubber mounting into extra profit-making lifting capacity.

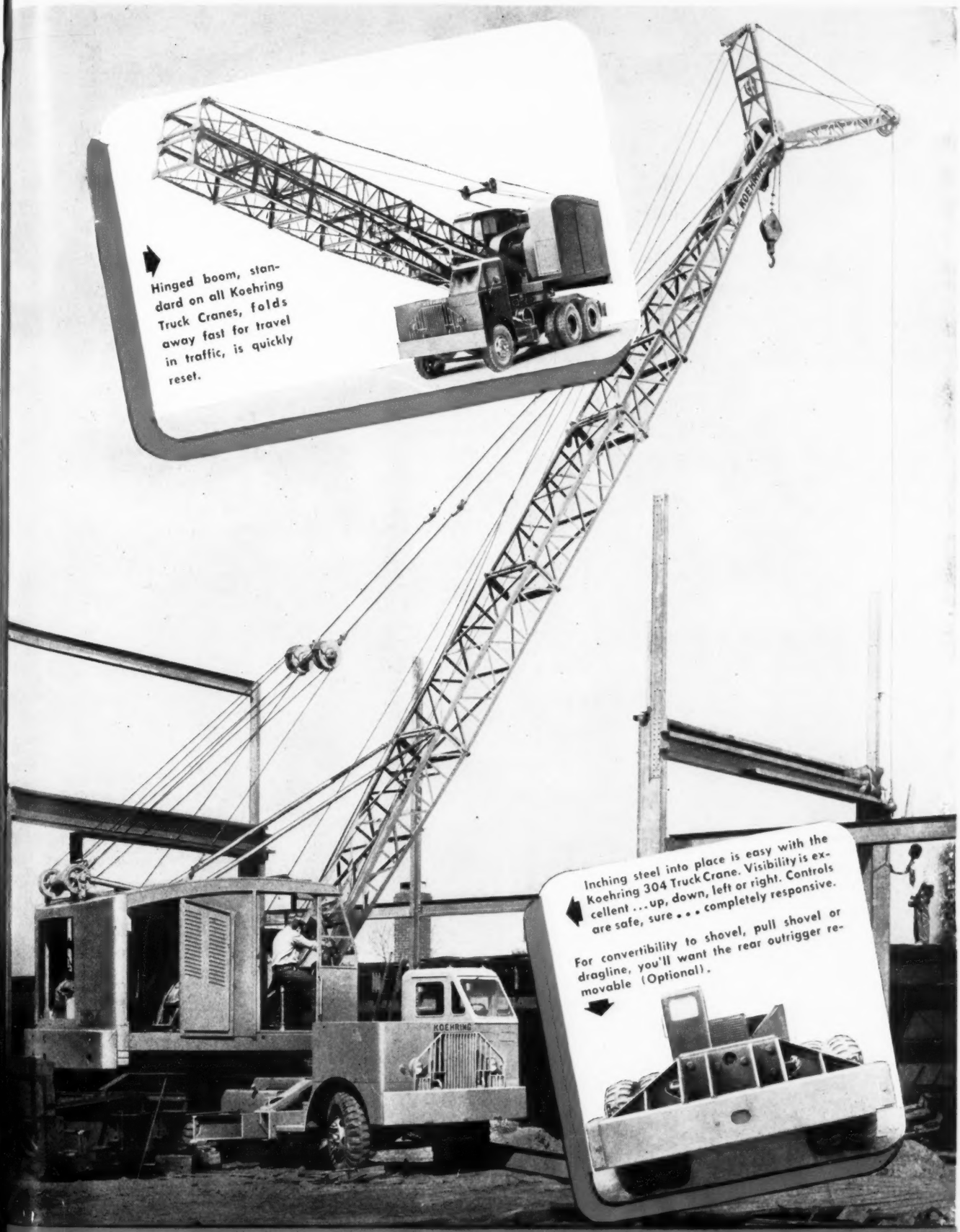
One-man operation saves labor cost as this Koehring 304 Cruiser Crane handles demolition to make room for new construction.

HAULING OR PAVING—KOEHRING MEANS HEAVY-DUTY

Koehring Dumptor, built by a shovel manufacturer for work with shovels, dumps in 1 second, never turns on shuttle hauls.



Koehring 34-E Twinbatch Paver, long the reliable Heavy-Duty leader in its field, gets highway jobs through on schedule, in the money.


Hinged boom, standard on all Koehring Truck Cranes, folds away fast for travel in traffic, is quickly reset.
Inching steel into place is easy with the Koehring 304 Truck Crane. Visibility is excellent . . . up, down, left or right. Controls are safe, sure . . . completely responsive.
For convertibility to shovel, pull shovel or dragline, you'll want the rear outrigger removable (Optional).
KOEHRING

KOEHRING COMPANY Milwaukee 10, Wis.

Subsidiaries: JOHNSON • KWIK-MIX • PARSONS

For Money In Your Pocket
PERFORMANCE . .

Resists Kinking

Being free from internal stress, it is always easy to handle—never fights back.

Spools Better

Even with a light load, it spools uniformly—is never cranky.

Takes Reverse Bends

Takes this "fatigue" much better, as on rope-ruining elevator installations.

Safer to Handle

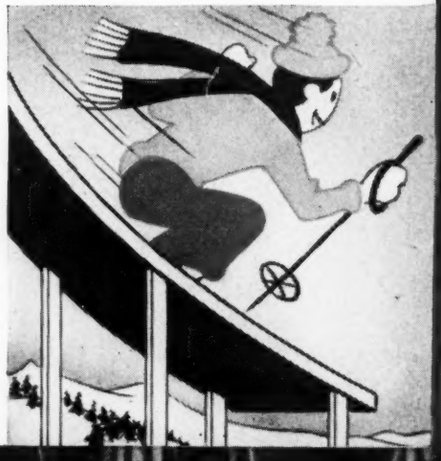
Worn union-formed ropes handle as safely as new, as broken outer wires lie close to rope.

Always Relaxed

While it is flexible, and pliant, it has the "toughness" to withstand strain and weight.

Behaves on Grooves

Resists rotating or twisting in sheave grooves because wires are *Pre*formed.



. . . Specify union

union-formed

(preformed)

THE ULTIMATE IN LOW COST WIRE ROPE

Precision Constructed to OUTPERFORM *ordinary Wire Rope*

FIGHT! FIGHT! There is an exhausting fight going on all the time in ordinary wire rope. Each wire is fighting constantly to get out of the fixed position into which it is forced without any preliminary training to put it in shape. This internal fighting spoils the performance, cuts it short, doesn't give you a run for your money.

In **union-formed** Wire Rope each wire is put in shape (*Pre*formed) before it ever touches another wire in the rope. The result is exactly the same that comes from a set of conditioned muscles, i. e. finer coordination, greater endurance, top-flight kind of performance that does not let you feel out-of-pocket.

Yes sir! You will always get the most out of the best. The little extra you invest for the best is the part of your investment which will bring the payoff — yield the most dividends. Prove this fact to your own satisfaction. *Specify* **union-formed** — get money-in-your-pocket performance.

union Wire Rope

UNION WIRE ROPE CORPORATION

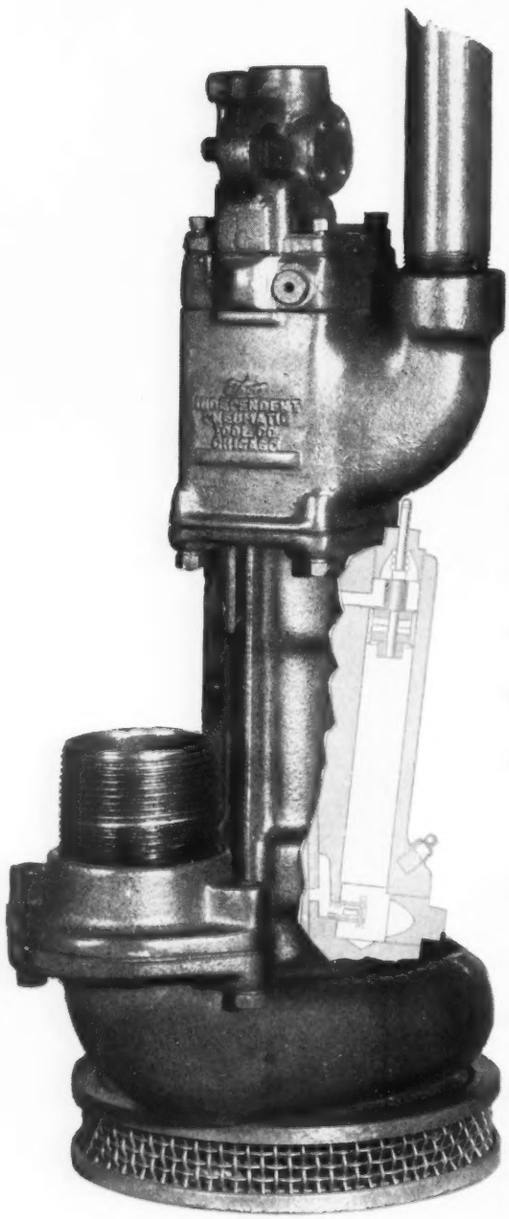
2174 Manchester Avenue Kansas City 3, Missouri

Tulsa 3 Houston 11 Chicago 6 Salt Lake City 13 New Orleans 16

Monahans, Tex. Portland 10, Ore. Ashland, Ky. Atlanta 1

union Wire Rope

Thor SUMP PUMPS Keep Pumping!



. . . *Improved Lubrication Assures Peak Efficiency*

In Sump Pumps, the *impeller shaft bearings* are the most vulnerable parts, with premature failure causing undue job delay and expense. Thor safeguards these vital points by a large grease reserve that is force-fed under continuous air pressure—pressure that further prevents foreign matter from working into the bearings. Because of this *exclusive feature*, Thor Pumps can be operated continuously up to a full shift without regreasing.

Thor Sump Pumps are designed to operate efficiently in clean or dirty water; in oil, sludge or sewage—either partially or fully submerged. Your nearby Thor Distributor will gladly demonstrate them as the economical answers to your sump-water problems.

INDEPENDENT PNEUMATIC TOOL COMPANY
600 W. Jackson Blvd., Chicago 6, Illinois

Birmingham · Boston · Buffalo · Cincinnati · Cleveland · Denver · Detroit
Houston · Los Angeles · Milwaukee · New York · Philadelphia · Pittsburgh
St. Louis · St. Paul · Salt Lake City · San Francisco · Toronto, Canada · London, England

Thor PORTABLE POWER TOOLS

PNEUMATIC TOOLS • UNIVERSAL AND HIGH FREQUENCY ELECTRIC TOOLS • MINING AND CONTRACTORS TOOLS

PROFIT TIP ... for Tractor-Scraper Buyers!

Use whatever tractors you like but be sure you get LaPLANT-CHOATE Scrapers — for best results under the most conditions.

When it comes to buying tractor-scraper rigs, remember *it's the scraper that controls the "payload."* And as every experienced dirtmover knows, there's a big difference in the performance of various scrapers under varying job conditions. Moreover, a difference of only 5 yards per hour, figured over the operating life of a scraper, can easily mean *60,000 yards of "pay dirt"—gained or lost—at your own bid price!*

That's why you'll find more and more smart dirtmovers buying their scrapers *entirely independent of the tractor* and holding out for job-proved LaPlant-Choate "Carrimors." Why LPC? Because operating records on hundreds of jobs prove conclusively that LaPlant-Choate rigs deliver *highest average production at lowest overall cost.* For one thing, they get bigger loads faster and easier in *all kinds of materials.* They also gain time traveling to and from the fill because they're free of costly dead weight. And when it comes to spreading—man, there isn't a scraper on the market that can match LaPlant-Choate *positive* forced ejection for cleaning the bowl in a hurry because *the apron moves ahead with the load*—no chance of jamming sticky or bulky material between the ejector and apron.

But that's only part of this interesting profit story. For complete facts call or write your nearest LaPlant-Choate dealer today. See him also for dependable repair parts and prompt, efficient service on your present LPC rigs. LaPlant-Choate Manufacturing Co., Inc., Cedar Rapids, Iowa; 1022 77th Ave., Oakland 3, Calif.

LaPLANT-CHOATE

Positive FORCED EJECTION SCRAPERS

FIRST in Value because they're FIRST in Performance!

DISTRIBUTORS

ALABAMA
Birmingham—YOUNG & VANN SUPPLY CO.
ARIZONA
Phoenix—MINE & SMELTER EQUIP. CO.
ARKANSAS
North Little Rock—STANDARD EQUIP. and SUPPLY CO.
CALIFORNIA
Oakland and Eureka—BURAN EQUIP. CO.
Los Angeles—GARLINGHOUSE BROTHERS
COLORADO
Denver—GUNDERSON-KRINGEL CO.
CONNECTICUT
Stamford—M. F. TAYLOR CONSTRUCTION EQUIPMENT & SUPPLIES
FLORIDA
Jacksonville—FARQUHAR MACHINERY CO.
Miami—GENERAL EQUIP. & SUPPLY CO.
Tampa—EPPERSON & CO.
GEORGIA
Atlanta—J. W. GRASS EQUIPMENT COMPANY, INC.
ILLINOIS
Chicago—CENTRAL CONTRACTORS SERVICE
Mt. Vernon—ED MEYER TRACTOR COMPANY
Springfield—ILLINOIS ROAD EQUIPMENT CO.
Rock Island—WESTERN EQUIP. & SUPPLY CO.
IDAHO
Boise—COLUMBIA EQUIPMENT COMPANY
INDIANA
Indianapolis—BOCK EQUIPMENT CO.
Rochester—DEEDS EQUIPMENT CO.
IOWA
Cedar Rapids and Des Moines—GLOBE MACHINERY & SUPPLY CO.
KANSAS
Topeka—MARTIN TRACTOR COMPANY
KENTUCKY
Louisville—NATIONAL EQUIPMENT CO.
Paducah—HENRY A. PETTER SUPPLY CO.
LOUISIANA
Baton Rouge, Monroe and New Orleans—DUNHAM-PUGH CO., INC.
MAINE
Portland—EASTERN TRACTOR & EQUIP. CO.
Presque Isle—ROY C. THOMPSON CO.
MARYLAND
Baltimore—MARYLAND SUPPLY & EQUIP. CO.
MASSACHUSETTS
Boston—PERRIN, SEAMANS & CO., INC.
MICHIGAN
Detroit—W. H. ANDERSON COMPANY, INC.
Grand Rapids—E. K. S. EQUIPMENT CO.
Marquette—MARQUETTE PUBLIC SERVICE GARAGE, INC.
MINNESOTA
Duluth and St. Paul—BORCHERT-INGERSOLL, INC.
MISSISSIPPI
Jackson—WATKINS-ALDRIDGE EQUIP. CO., LTD.
MISSOURI
Kansas City—CONTRACTORS SUPPLY CO.
St. Louis—MISSOURI-ILLINOIS TRACTOR & EQUIPMENT CO.
MONTANA
Butte and Great Falls—MONTANA HARDWARE CO.
NEBRASKA
Omaha—FENRS TRACTOR & EQUIP. CO.
NEVADA
Reno—NEVADA TRUCK SALES
NEW JERSEY
Union—SMITH TRACTOR & EQUIP. CO.
NEW MEXICO
Albuquerque—HARRY CORNELIUS CO.
NEW YORK
Albany—SLADE TRACTOR & EQUIPMENT CO.
Buffalo—FOX EQUIPMENT CO.
New York—H. O. PENN MACHINERY CO.
Rochester—HAVERSTICK & CO.
Utica—CREDLE EQUIPMENT CO.
NORTH CAROLINA
Charlotte—CONTRACTORS SERVICE, INC.
NORTH DAKOTA
Fargo—MYHRA EQUIPMENT CO.
OHIO
Cincinnati—THE FINN EQUIPMENT CO.
Columbus—BLAKE EQUIPMENT CO.
Marietta—NORTHWEST SUPPLY & EQUIP. CO.
Toledo—EDMUND SUPPLY CO.
OKLAHOMA
Oklahoma City—THE BOARDMAN CO.
OREGON
Portland—COLUMBIA EQUIPMENT CO.
PENNSYLVANIA
Clearfield—CLEARFIELD EQUIPMENT CO.
Philadelphia—METALWELD, INC.
Pittsburgh—BRINKER SUPPLY CO.
Wilkes-Barre—STANDARD EQUIPMENT CO.
SOUTH CAROLINA
Columbia—TIDEWATER SUPPLY CO., INC.
TENNESSEE
Knoxville and Nashville—DEMPSTER BROS.
Memphis—HOWELL EQUIPMENT CO.
TEXAS
Dallas—HI-WAY MACHINERY COMPANY
El Paso—DON A. CARPENTER CO.
Houston—SOUTH TEXAS EQUIPMENT CO.
Lubbock—FRED BERRYHILL EQUIP. CO.
San Antonio—TOWERY EQUIPMENT CO.
UTAH
Salt Lake City—THE LANG CO., INC.
VERMONT
White River Junction—NOBLE-BELISLE MACHINERY CO.
VIRGINIA
Norfolk and Roanoke—TIDEWATER SUPPLY CO.
Richmond—INDUSTRIAL SUPPLY CO.
WASHINGTON
Seattle and Spokane—COLUMBIA EQUIP. CO.
WEST VIRGINIA
Charleston—CLYDE W. BECKNER, INC.
WISCONSIN
Milwaukee—STONE MANUFACTURING CO.
Park Falls—STEIGER MOTOR SALES
ALASKA
Anchorage—NORTHERN ENGINEERING & EQUIPMENT CO.

NOVO NEWS

AUGUST, 1947

"Best Pump We Ever Had"

Eastern Contractor Says Novo "Pronto-Prime" Is Answer to Pumping Problems

A Tough Job

Here's the tough job on which the work of the Novo "Pronto-Prime" amazed Philadelphia contractors. One of the big reasons for its outstanding success story is its dependable, stout-hearted seal. In repeated torture tests as well as in field operations, this seal has proved it can take it for hours on end—abrasive grit, including sandblast sand for over 2000 hours . . . ordinary muddy water for indefinite periods.

Other "Pronto-Prime" features are equally impressive — super-speed priming; independent pump unit; universal base; accessibility of wearing parts; self-cleaning; and many mechanical advantages.

Other Contractors' Equipment by Novo

Novo contractors' equipment—backed by over 50 years of manufacturing experience—includes diaphragm pumps, pressure pumps, hoists, generator sets, air compressors, pavement breakers, engines, and the Scootruk mechanized wheelbarrow.

It Handles Muddy Water All Day

Want the facts on self-priming centrifugal pumps? Ask D & C Spinoza, Philadelphia contractors, what they think of the Novo "Pronto-Prime." Their answer means something — because it's based on actual experience.

They were having plenty of trouble with water on a big sewer job along Pennypacken State Road —until they hooked up a 3" "Pronto-Prime." With a capacity of 20,000 gallons per hour, it took charge of the situation immediately. Pumping 69 seconds, priming 25 to 60 seconds, this sturdy pump operated 9 hours daily—and continued to do so for over three months.

The suction lift was 25 ft. through 40 ft. of hose; the discharge head was 10 ft. through 50 ft. of hose.

It's a rough, tough job for any pump — but the "Pronto-Prime" got the nod from those who studied it at work day after day.

C. Spinoza

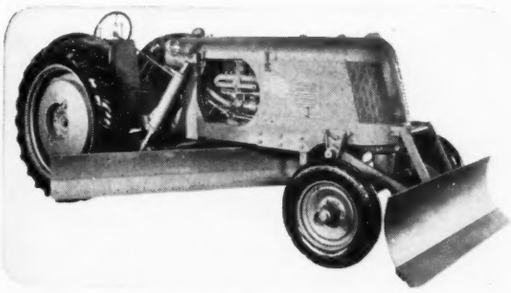
C. Spinoza, partner of D & C Spinoza, has this to say about the "Pronto-Prime": "It's the best pump we have ever had. Have two other makes on this job but they are not as good. It's the answer to our pumping problems. Never stops, handles muddy water all day long. It's surprisingly economical. In other words, it's tops with D & C!"

Allied Member of A.E.D.

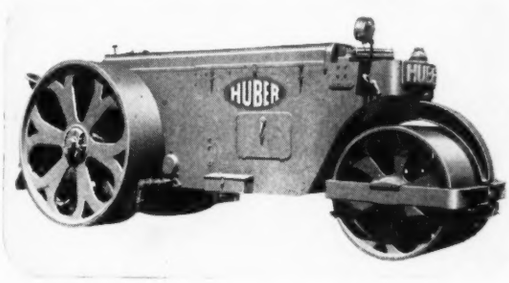
NOVO ENGINE COMPANY
LANSING 9, MICH. U.S.A.

CONTRACTOR'S EQUIPMENT
· GRAY IRON CASTINGS ·
ENGINES

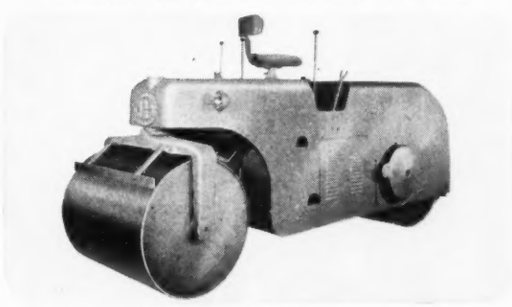
EVERYWHERE YOU GO



HUBER MAINTAINER
A versatile machine that also serves as a bull-dozer, lift-loader, patch roller, snowplow, or rotary broom.



HUBER 3-WHEEL ROLLERS
Automotive type, built in sizes from 5 to 12 ton.



HUBER TANDEM ROLLERS
Variable weight, built in sizes from 3 to 12 ton.

HUBER
ROAD MACHINERY
is on the Job

It is a lot of satisfaction in knowing that promises and budgets for road building and maintenance can be made with full confidence that the road machinery you own will back you to the limit. Huber 3-Wheel Rollers, Huber Tandem Rollers, and the versatile Huber Maintainer is just that type of equipment. Many, many years of experience in building road machinery, plus a working knowledge of your problems have gone into Hubers to provide the speed, power, and dependable performance you need to do your best work. Your Huber Distributor will be glad to discuss these points with you.

THE HUBER MFG. COMPANY • MARION, OHIO, U. S. A.

HUBER

3 Wheel • Tandem
ROAD ROLLERS *and* MAINTAINERS

For the LONG PULL

. . . for the hard pull. . . for the continuous pull —that's where "HERCULES" (Red-Strand) Wire Rope proves its outstanding stamina!

Yes, here is a truly *tough* rope in Round Strand and Flattened Strand constructions—both Preformed and Non-Preformed —designed and fabricated to correctly meet every "heavy duty" Wire Rope requirement . . . regardless of clime, place or condition.

So, when your next job calls for *economical* service, over a 'long pull'—play safe, and let the Red-Strand be your buying guide.

Your inquiries are always welcome.

"HERCULES"

REG. U.S. PAT. OFF.

RED-STRAND

WIRE ROPE

MADE ONLY BY

A. LESCHEN & SONS ROPE CO.

ESTABLISHED 1857

5909 KENNERLY AVENUE • ST. LOUIS 12, MISSOURI

• CHICAGO • DENVER • SAN FRANCISCO • PORTLAND • SEATTLE

LIFT! LOAD! HAUL! DIG!

WITH A UNIT 357 MOBILE CRANE

IT'S SELF-PROPELLED

IT RIDES ON RUBBER

IT HAS 1001 USES

The UNIT 357 Mobile Crane is designed to handle a wide variety of jobs both on and off the highway. Compact . . . it works efficiently in close quarters. Sufficiently narrow for convenient road travel . . . and as easy to handle as an automobile.

Operated by ONE man . . . Powered by ONE engine . . . Full Vision Cab gives operator complete visibility in every direction.

The complete UNIT 357 story . . . its Low Cost . . . its Fast Delivery . . . its many modern and exclusive features will convince you. Write for it today!

CONTACT FACTORY DIRECT FOR PRICE AND DELIVERY

UNIT CRANE and SHOVEL CORP., 6305 W. Burnham St., Milwaukee 14, Wis., U.S.A.

Truer Words Were Never Spoken— Mr. Winkelman

EXCERPT FROM A PAPER GIVEN BEFORE THE ASSOCIATION OF HIGHWAY OFFICIALS OF THE NORTH ATLANTIC STATES, ATLANTIC CITY, FEB. 27, 1947

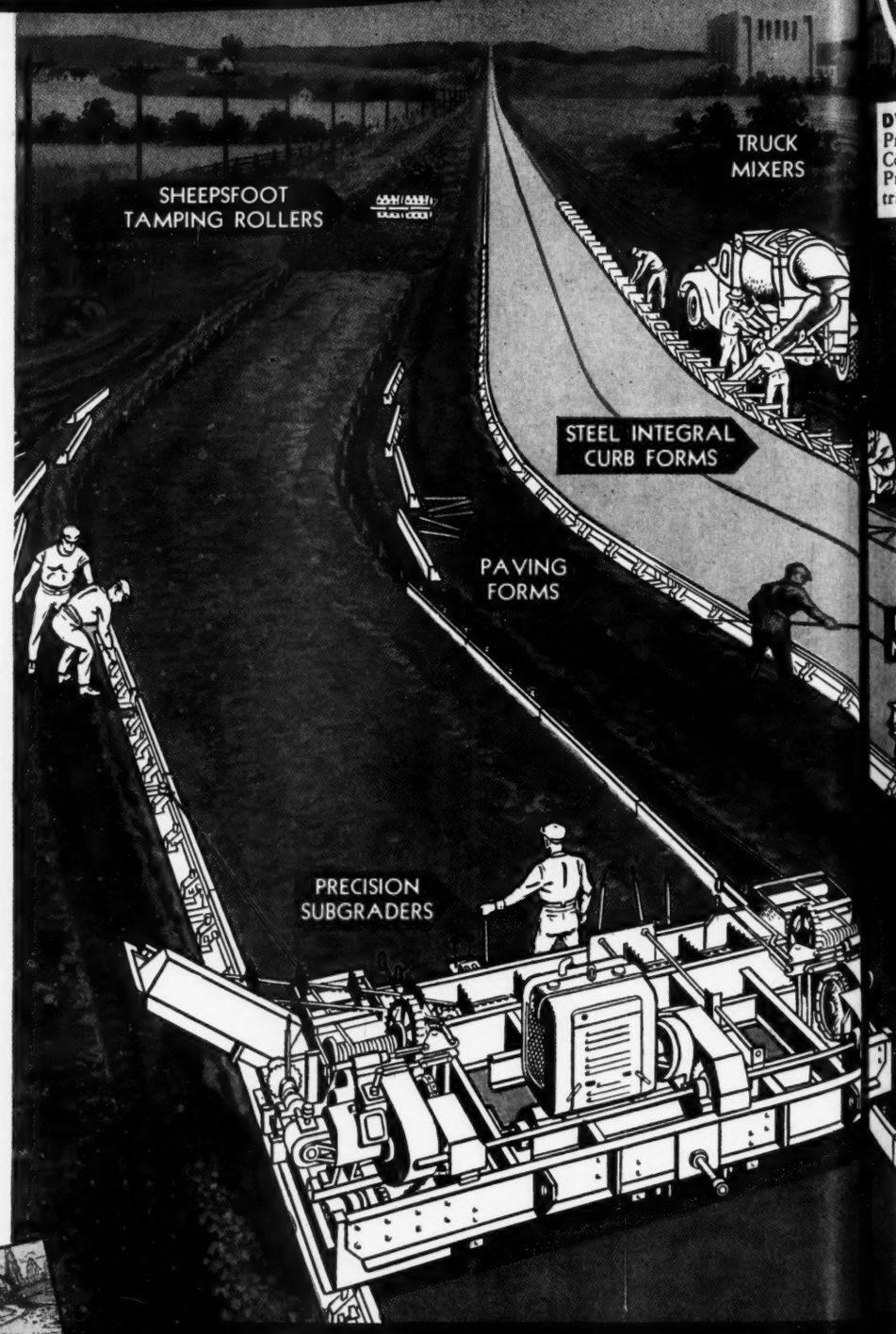
The Best Concrete Paving
. . . with the Fewest Men
. . . at Lowest Cost
. . . in the Quickest Time

can be done if the job is thoroughly mechanized by Blaw-Knox . . . the contractor's only single source for a complete outfit of job-tested —*tried and true*—concrete paving machinery.

Now, when bids are submitted with your fingers crossed —the efficiency that Blaw-Knox builds into its machines *really pays off* for the contractor.

BLAW-KNOX DIVISION
of Blaw-Knox Company
2086 Farmers Bank Building,
Pittsburgh 22, Pa.

See your Nearest Blaw-Knox Distributor.



BLAW-K

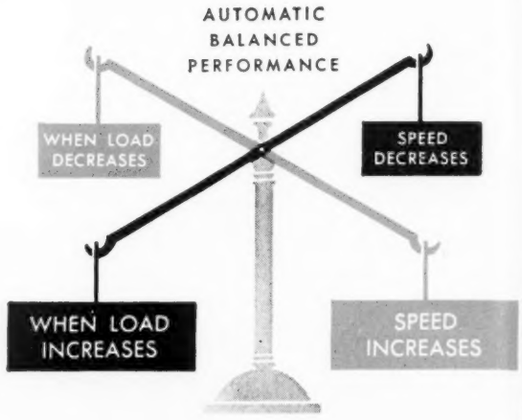
Time and Labor Saving CO

"One of the methods by which contractors can cut highway construction costs is through the use of machinery which increases the productivity of workmen."
DWIGHT W. WINKELMAN
President, D. W. Winkelman Co., Syracuse, N. Y., and Vice Pres., Associated General Contractors of America, Inc.
CLAMSHELL BUCKETS
PORTABLE AGGREGATE BATCHING PLANTS
PORTABLE BULK CEMENT PLANTS
Concrete Paving must be mechanized
FINISHING MACHINES
PAVING SPREADER-VIBRATORS
CONCRETE BUCKETS
STEEL FORMS FOR CONCRETE CONSTRUCTION
KNOX
CONSTRUCTION EQUIPMENT

The Hydraulic Torque-Converter Tractor

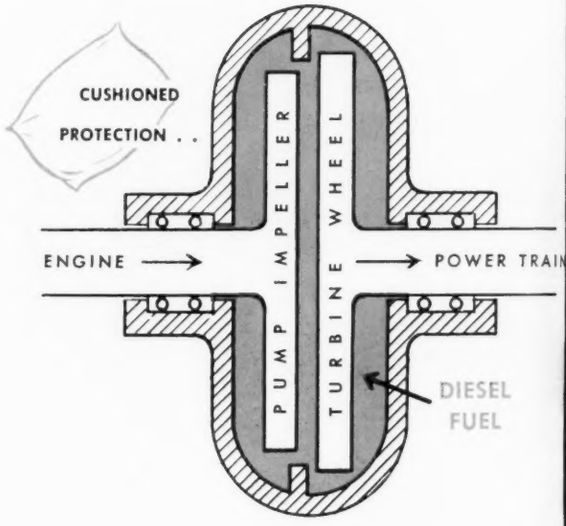
PRODUCES MORE

The hydraulic torque converter tractor gets more done because it works at higher *average* speeds — achieved in numerous ways. Torque converter automatically and constantly keeps tractor at a travel speed which utilizes full engine horsepower, regardless of load . . . also provides fast acceleration — peak hauling speed reached quickly. Keeps tractor moving by eliminating most of the gear-shifting. Increases operator efficiency because there's less effort required to operate tractor.



CUTS UPKEEP COST

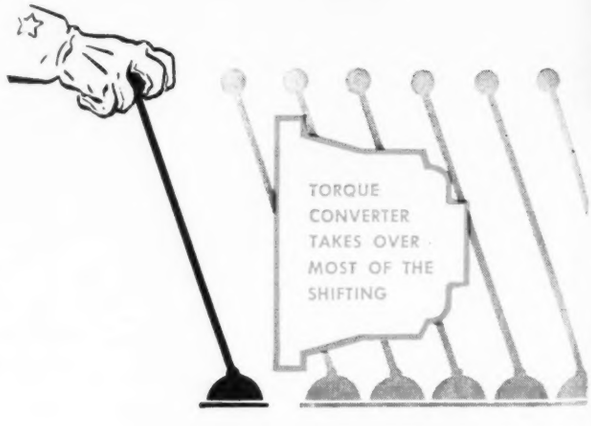
Longer life, less breakage and wear are assured for tractor and auxiliary equipment because operation is continuously smooth. There is no shock from master clutch engagement, because in the torque converter tractor it engages under no load. The diesel fuel, which operates the converter, acts as a cushion between engine and tractor train — no sudden twists or jerks can be transferred between driving and driven parts.



MAKES IT EASIER FOR OPERATOR

No restarting — engine can't be stalled. No constant shifting — torque converter automatically selects the maximum speed ranges at which load can be moved. No jolts and shock to tire operator — power flow is smooth and even.

To approach the accomplishment of a torque converter . . . a fluid coupling would be required, plus a transmission with an unlimited number of gear ratios, and an operator with the impossible task of continuously shifting into the right gear at just the right moment — instantaneously.



ALLIS-CHALMERS

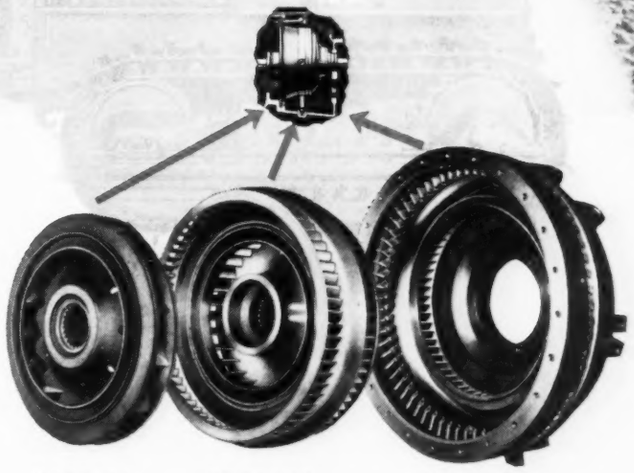
TRACTOR DIVISION • MILWAUKEE 1, U. S. A.

Takes Work Away From Operator

YET GETS MORE WORK DONE!

WHAT THE TORQUE CONVERTER IS

The Twin Disc torque converter in Allis-Chalmers tractors is a remarkably simple mechanism. It consists of only two wheels — impeller and turbine — rotating independently of each other in an oil-filled housing. The impeller is directly connected to the engine, and the turbine to the power train.



IMPELLER TURBINE HOUSING

Originator of the Torque-Converter Tractor

This Program PAYS OFF in

1 CORRECT LUBRICATION

for every part of every machine you operate

TO MINIMIZE machine failures and slowdowns—speed work on rush jobs—Socony-Vacuum meets even your most specialized lubrication requirements.

For example, we offer you oils that help keep Diesel and gasoline engines *cleaner* and freer of deposits . . . oils that help protect vital parts against corrosion . . .

. . . gear and bearing lubricants specially *made* to fight heat, friction, costly wear . . .

. . . top-quality oils for all kinds of excavating and earth-moving equipment, all types of air compressors and power tools. Call in your Socony-Vacuum Representative *now* for correct lubrication recommendations.

Rely on SOCONY-VACUUM CONTRACTORS' SERVICE

Faster Progress on Pay Jobs!

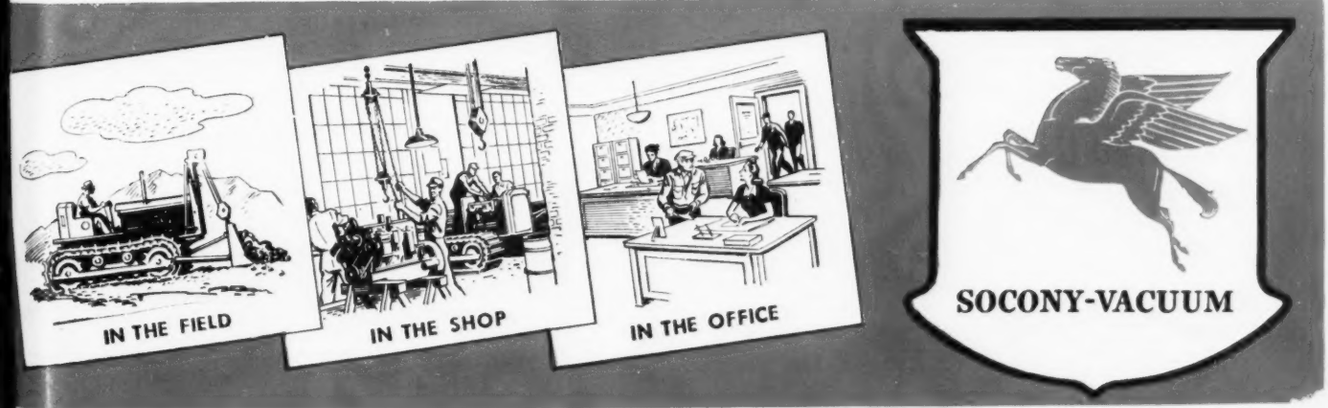
HERE ARE just a few of the ways we help you ease tight work schedules, meet and beat contract deadlines:

1. Supply you with tested maintenance schedules adapted to *your* equipment, *your* set-up.
2. Give you practical help on "problem" machines.
3. Provide information on the Do's and Don't's of Correct Lubrication.
4. Supply the requirements for oils and greases for all of your equipment.
5. Help simplify lubricant inventory problems.

* * *

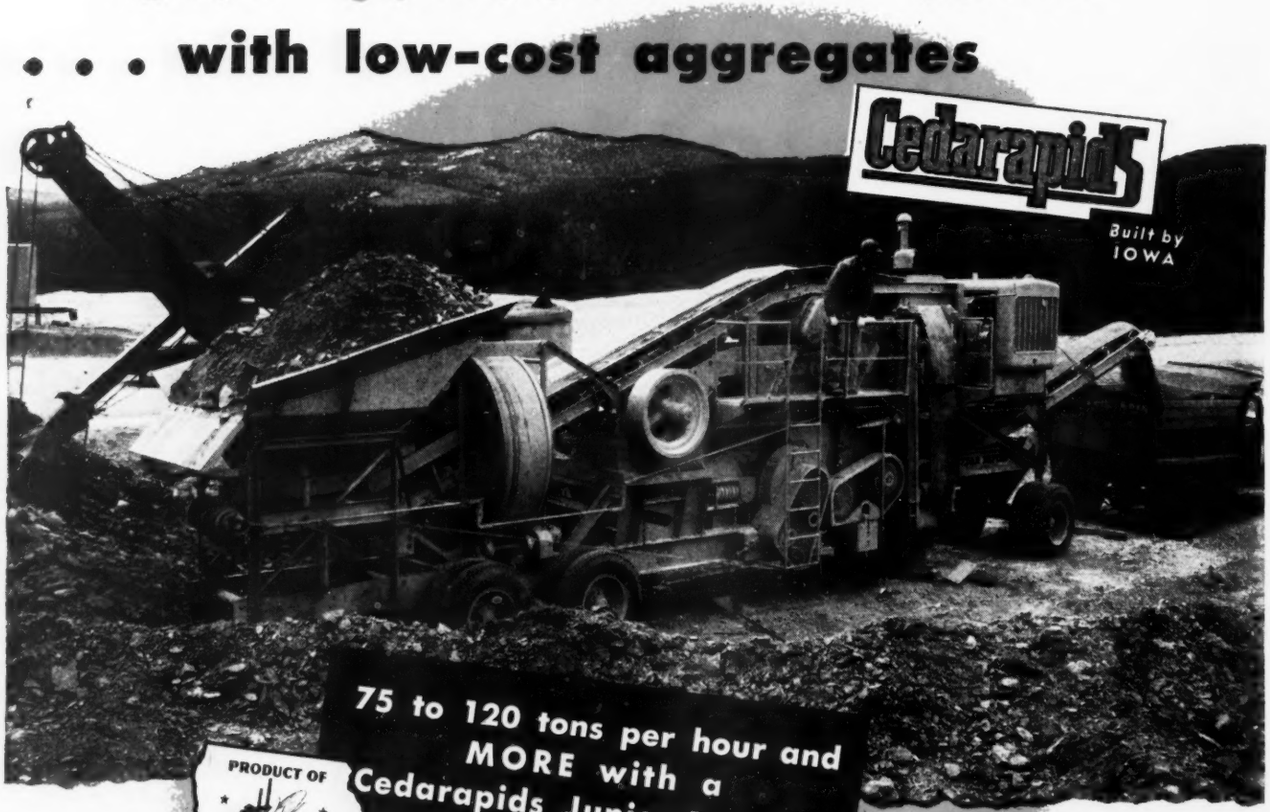
On the job, in the shop and in the office . . . all through your operation, this service saves valuable time! See your Socony-Vacuum Representative today for full details.

SOCONY-VACUUM OIL CO., INC., and Affiliates: MAGNOLIA PETROLEUM CO., GENERAL PETROLEUM CORP.



Cut construction costs

. . . with low-cost aggregates



● In times like these, everything possible must be done to cut the high costs that are retarding construction work of all kinds. Modern crushing and screening plants with low operating and maintenance costs and high capacities will lower the cost of producing one of the basic raw materials. Cedarapids offers the Junior Tandem for that job.

It's a complete gravel crushing and screening plant that can be quickly converted to a crushed stone plant simply by adding a Cedarapids portable primary. The addition of a washing plant converts the Junior Tandem to a multi-sized washed gravel and stone plant. Here's flexibility, portability and economy that mean low-cost aggregates for every construction job.

You can feed a Junior Tandem with a shovel, dragline or with any of the other standard feeding units, move it wherever necessary, set it up for operation with the minimum of time and expense and crush and screen whatever is available close to the job.

When you buy a crushing plant—buy the best—buy Cedarapids. Better get the facts from your nearest Cedarapids dealer today.

The Iowa Line *of Material Handling Equipment Includes*

ROCK AND GRAVEL CRUSHERS • BELT CONVEYORS • STEEL BINS • BUCKET ELEVATORS • VIBRATOR AND REVOLVING SCREENS • STRAIGHT LINE ROCK AND GRAVEL PLANTS • FEEDERS • TRAPS • PORTABLE POWER CONVEYORS • PORTABLE STONE PLANTS • PORTABLE GRAVEL PLANTS • REDUCTION CRUSHERS • BATCH TYPE ASPHALT PLANTS • DRAG SCRAPER TANKS • WASHING PLANTS • TRACTOR-CRUSHER PLANTS STEEL TRUCKS AND TRAILERS • KUBIT IMPACT BREAKERS

Iowa Manufacturing Company, Cedar Rapids, Iowa, U. S. A.

Rayon cord carcass with *Rhino-Flex* construction gives more flexibility, longer wear, greater safety.

WHAT a beating Armstrong *Rhino-Flex* Truck Tires take! They stand up to the roughest, toughest treatment, mile after mile. The secret's in the carcass—*Rhino-Flex* constructed with rayon cord to ride with the punch and snap back fast.

No wonder truckers everywhere praise the hard-wearing, easy-riding Armstrong Tire.

So take a tip from truckers and roll your fleet on the safest, coolest truck tires Armstrong ever built.

Rhino-Flex truck tires are now available from coast to coast. See! Compare! You'll choose Armstrong every time.

ARMSTRONG Rhino-Flex TIRES

Since 1912, a trusted name in tires!

Plants: West Haven, Conn. • Natchez, Miss. • Des Moines, Iowa • General Sales Offices — 460 Elm Street, West Haven 16, Conn.

Powered to Build Better Profits . . .

ADVANCE-DESIGN CHEVROLET TRUCKS

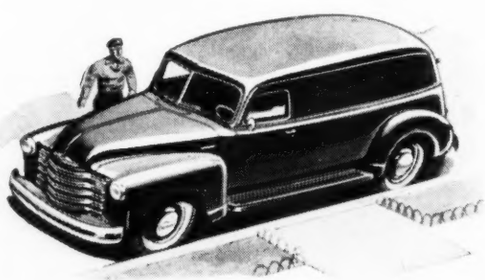
WITH THE CAB THAT "BREATHES"

America's first ADVANCE-DESIGN trucks, featuring the larger, roomier cab that "breathes"! The unique new cab almost literally "inhales" fresh air and "exhales" used air,* assuring day-long driver comfort and efficiency. Other new features and innovations make these the trucks to see *first* at your Chevrolet dealer's!

Extra-economical and powerful Chevrolet **VALVE-IN-HEAD ENGINES** are time-savers, profit-makers! There are exclusively designed **HYDRAULIC TRUCK BRAKES,** too, with greater brake-lining contact for quick, safe stops!

More efficient loading in stake and high rack bodies—more **LOAD SPACE** in panels and pick-ups. Chevrolet truck **FRAMES** are new, stronger and sturdier, designed to carry greater loads for a longer time!

Better load distribution, due to **LONGER WHEELBASES. FULL-FLOATING HYPOID REAR AXLES** mean extra pulling power! They're geared for the load!



**Fresh-air heating and ventilating system optional at extra cost.*

CHEVROLET **CHEVROLET TRUCKS** FOR TRANSPORTATION UNLIMITED

Pick-ups Panels Stakes Cab-Over-Engine Tractor-Trucks & Chassis for Special Equipment

CHEVROLET MOTOR DIVISION, *General Motors Corporation,* DETROIT 2, MICHIGAN

Your Chevrolet dealer can supply standard or special equipment for your specific hauling needs.

A TERRIFIC TEAM...

BAKER Bulldozer...ALLIS-CHALMERS HD-5

Baker Gradebuilder and the Allis-Chalmers HD-5 make quick work of tearing out tree trunks in clearing land!

BAKER MFG. CO. • Springfield, Ill.

BAKER

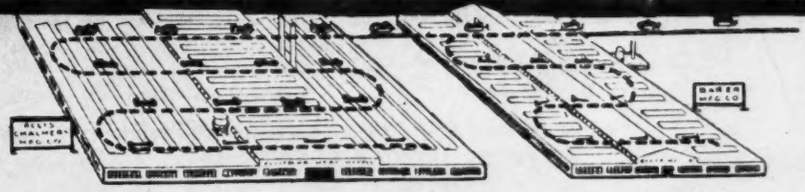
BAKER They Go Together! AC

The hard-hitting, smooth-performing team of a Baker Bulldozer and the new, speedy Allis-Chalmers HD-5 tractor provides earth movers another in a long line of tough, hard working bulldozing combinations.

Small, rugged and highly efficient, this powerful bulldozer-tractor combination is designed and constructed to handle a large variety of jobs and materials speedily and economically. Such built-in features as direct down pressure, less linkage, low pressure hydraulic system and fast, sensitive blade control assures dependable performance at all times.

For the maximum in output, for the greatest return on your investment, specify Baker Bulldozers and Gradebuilders, on your Allis-Chalmers tractor.

"STRAIGHT THROUGH" ASSEMBLY LINE – ALLIS-CHALMERS TO BAKER TO YOU!



The modern Baker plant with its completely equipped fabricating, machining and blacksmithing shops adjoins the Allis-Chalmers crawler tractor plant. When you order an A-C tractor with Baker bulldozer or gradebuilder, your tractor leaves the A-C assembly line, crosses a narrow court and goes on the Baker final assembly line.

riding high and easy

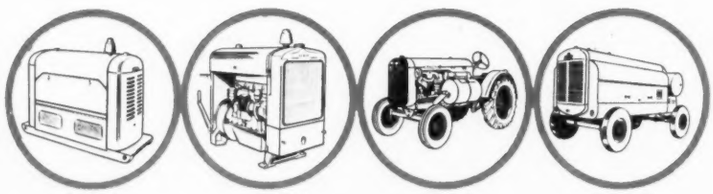
...the smooth, dependable, easy-holding power of LE ROI-CLEVELAND Sinkers reduces drilling costs by drilling more feet of hole per shift—for more shifts

Power for fast drilling in hard rock; power that rotates the steel in "fitchery" formations; power that cleans the holes and improves performance — you get all kinds of power in Le Roi-Cleveland 45-lb. H-10 and 55-lb. H-111 sinkers.

This power, besides producing more feet of hole in a shift, is easy to handle. It is smooth power that seems to flow like the air that drives these outstanding drills. "Kick-back" is reduced to such an extent that both the H-10 and H-111 are easy to run, even on long steels.

And, it is dependable power. The working parts are carefully designed to provide the strongest possible sections — they are heat-treated by men who have more than 40 years of heat-treating experience behind them — and they are enclosed and protected by durable drop forgings.

Put Le Roi-Cleveland sinkers to work, and take a big slice out of your drilling costs — shift after shift. See your Le Roi distributor or write for our latest literature.



Le Roi Engine-generator Set | *Le Roi Heavy-duty Engine* | *Le Roi 105 Tractair** | *Le Roi Airmaster**

LE ROI COMPANY

CLEVELAND DIVISION

Manufacturers of Cleveland Rock Drills

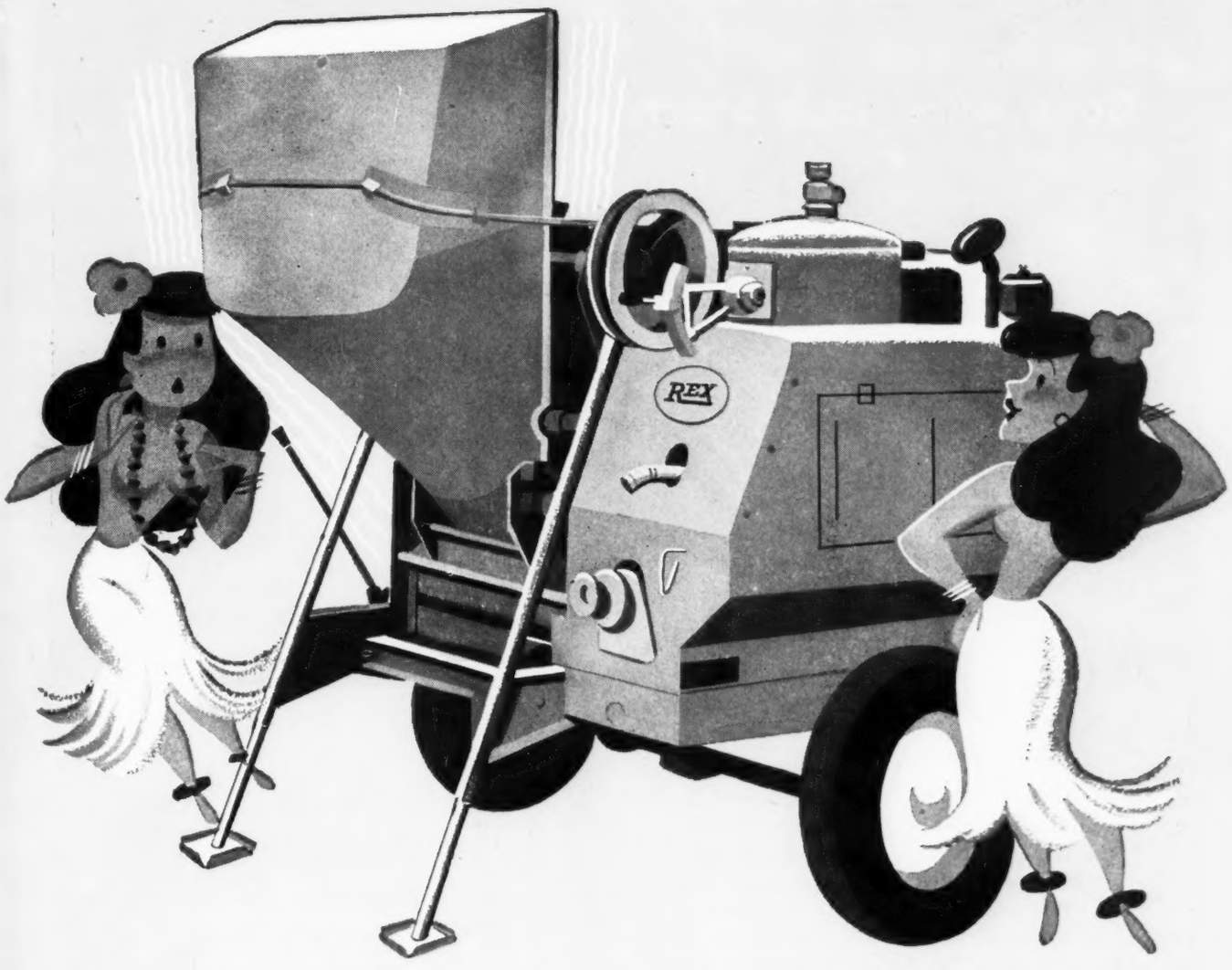
Cleveland 11, Ohio

LE ROI COMPANY, General Offices, Milwaukee 14, Wisconsin

NEW YORK • WASHINGTON • CLEVELAND • MILWAUKEE
BIRMINGHAM • TULSA • BUTTE • SAN FRANCISCO

RD-10

*Reg. U. S. Pat. Off.



"Wish we could 'shimmy' like that Rex Skip"

The Rex "Shimmy Skip" is in a class by itself when it comes to getting the batch into the drum faster! You don't have to pound it to get all the batch to drop. The "Shimmy Skip" provides just the right amount of snappy, shaking action . . . 304 sharp impacts per minute . . . for a clean, quick, time-saving charge that adds up to more batches per day . . . more yards per job . . . more profit for you.

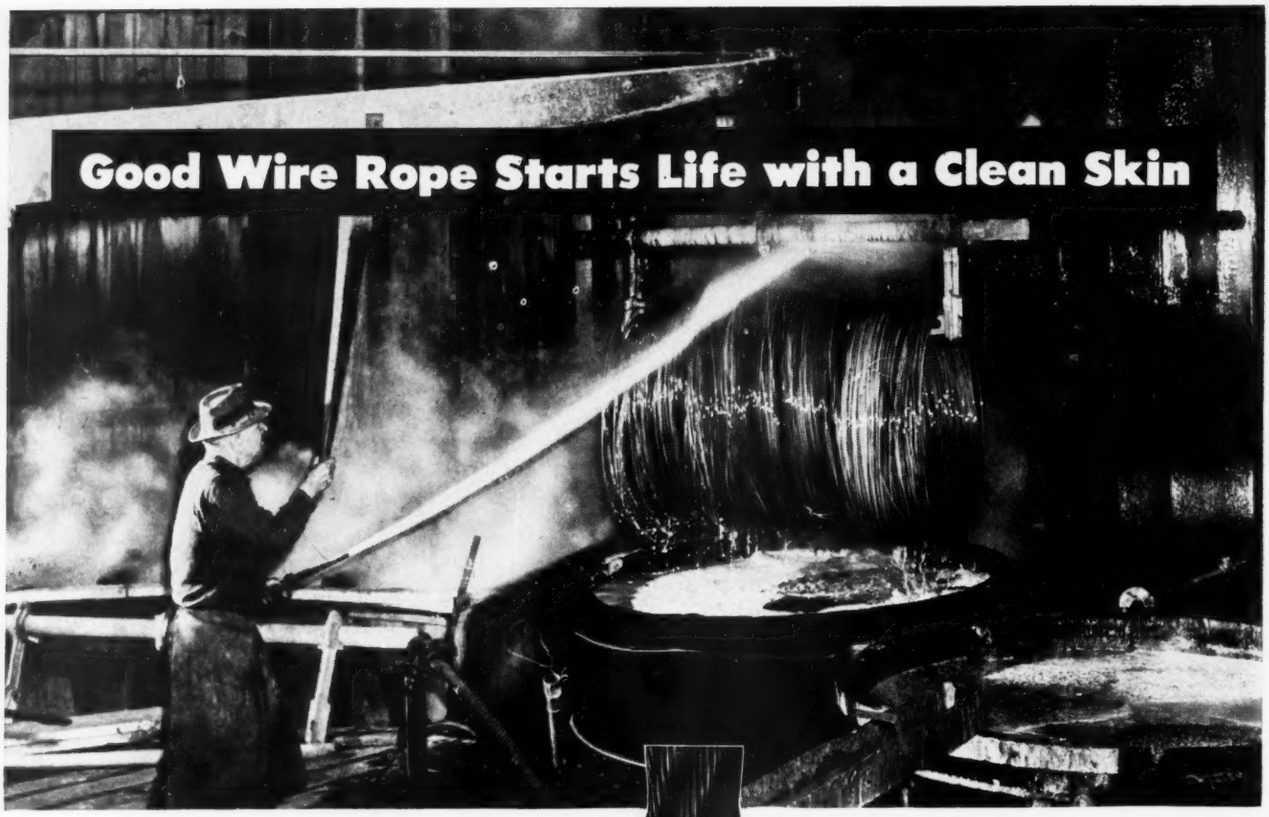
The Rex "Shimmy Skip" is actuated by wedge-shaped lugs on the drum . . . the heaviest part of the mixer. As the drum rotates, these lugs engage shaker rollers on the skip, causing the "shimmying" action. There are no cams, gears, delicate adjustments, or fast wearing parts. There is no strain or extra wear on the skip . . . no extra burden on the transmission. Skip itself is sturdily built of heavy-gauge steel for maximum service life.

For all the facts, see your Rex Distributor or write for a copy of Bulletin No. 480. Chain Belt Company, 1664 W. Bruce St., Milwaukee 4, Wis.

CHAIN BELT COMPANY *of* MILWAUKEE

REX

CONSTRUCTION MACHINERY



Good Wire Rope Starts Life with a Clean Skin

Because scale is extremely detrimental to good wire drawing, every coil of rod that enters Wickwire's Rope Mill is thoroughly cleaned in a carefully prepared bath —with temperature thermostatically controlled and with acidity checked and recorded at frequent, regular intervals. Then the rods are sprayed with a high pressure hose to remove all traces of acid and scale, dipped in "bath salts," lime-coated, baked, and sent to be drawn into wire.

Thorough cleaning is only one small step in the quality control of Wickwire Rope manufacture—but we at Wickwire believe that *every* step is important to assure finished rope that will stand rugged service—in oil fields, logging and construction camps, shipyards, mines, mills and skyscrapers. Wickwire distributors and rope engineers in key cities everywhere are ready to help solve your wire rope problems and to supply the type of rope that best meets your requirements.

For the utmost in performance, safety and long life, specify Wickwire Rope. Available for prompt delivery in all sizes and constructions, both regular lay and WISSCOLAY *Pre*formed.

THIS 82-PAGE BOOK ON WIRE ROPE IS FREE WRITE FOR YOUR COPY TODAY!

Thousands of wire rope users have found that the information packed in the pages of "Know Your Ropes" has made their work easier. It's full of suggestions on proper selection, application and usage of wire rope. It's easy-to-read and profusely illustrated. For your free copy, write—Wire Rope Sales Office, Wickwire Spencer Steel, Palmer, Mass.

WICKWIRE ROPE

CF&I & SUBSIDIARIES

A PRODUCT OF WICKWIRE SPENCER STEEL DIVISION OF THE COLORADO FUEL AND IRON CORPORATION

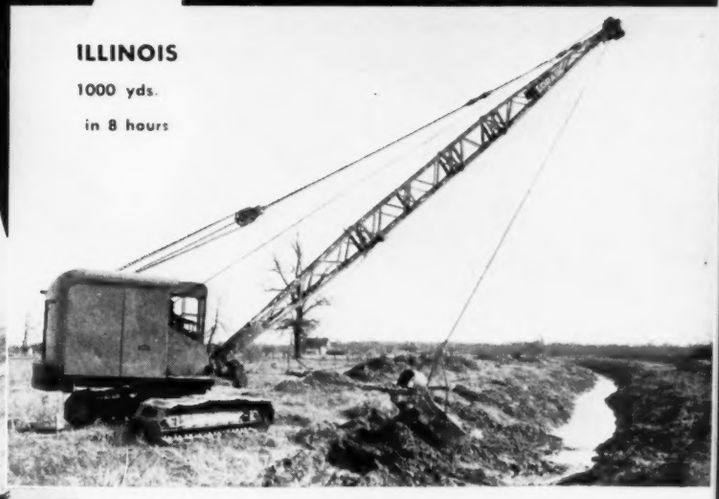
WIRE ROPE SALES OFFICE AND PLANT—Palmer, Mass. **EXECUTIVE OFFICE**—500 Fifth Avenue, New York 18, N. Y.

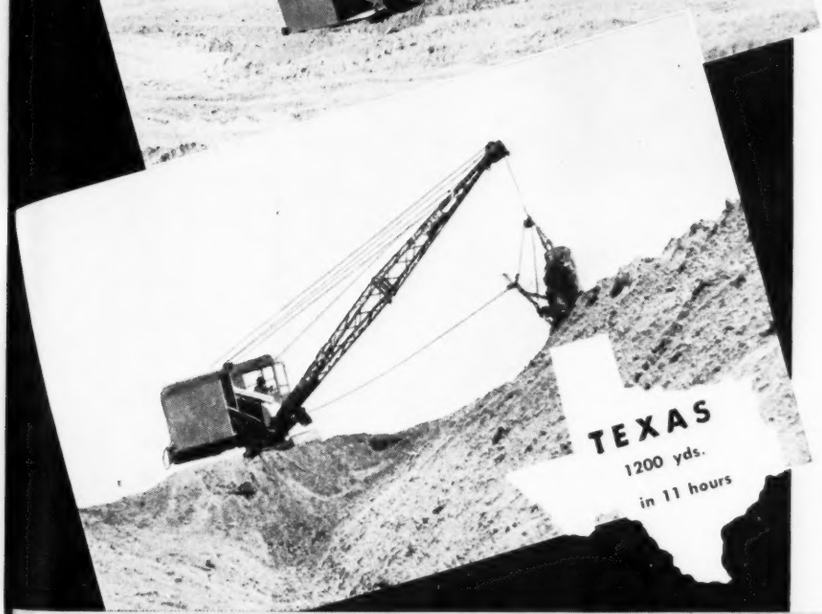
SALES OFFICES—Abilene (Tex.) • Boston • Buffalo • Chattanooga • Chicago • Denver • Detroit • Emlenton (Pa.) • Philadelphia • Tulsa • Fort Worth • Houston • New York

PACIFIC COAST—The California Wire Cloth Corporation, Oakland 6, California

GOT A YEN FOR *Yardage?*

If you want a big producer in the ¾ yd. class, the Lorain 41 is your baby



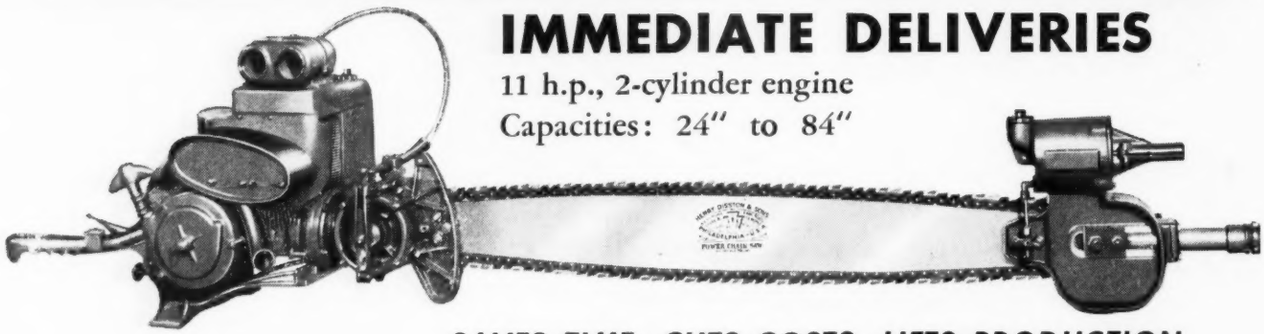


THERE you are! Actual yardage records made in all types of digging, under different conditions and from widely separated sections of the continent. It's the kind of proof that makes sense to profit-minded contractors. If yardage is your yardstick of value, call or write your local Thew-Lorain distributor now. He can show you Lorain-41's right in your own area with equally impressive performance records.

THE THEW SHOVEL COMPANY
Lorain, Ohio

Thew® **Lorain 41**

DISSTON CHAIN SAW
with Mercury Gasoline Engine



IMMEDIATE DELIVERIES

11 h.p., 2-cylinder engine
Capacities: 24" to 84"

SAVES TIME, CUTS COSTS, LIFTS PRODUCTION

The Disston Chain Saw is a self-contained, portable, gasoline powered saw that can be operated in all climates. It is ruggedly built, light in weight, easy to operate and cuts from all angles. It results in greater production and economy wherever heavy timbers are cut . . . in the forests; on railroads and contracting jobs; at shipyards and manufacturing plants of many kinds.

The engine, designed specially for chain saw operation, has more power per pound of weight than any other chain saw engine. It is manually controlled to utilize full engine power under all cutting conditions. Other features include: die-cast engine cylinders and cooling fan; gear driven magneto; fuel filter built in tank; air filter; positive acting multiple disc clutch; many others. And the tough, durable cutting chain gives perfect contact with drive sprocket under all load conditions.

DISSTON CHAIN SAW
PNEUMATIC

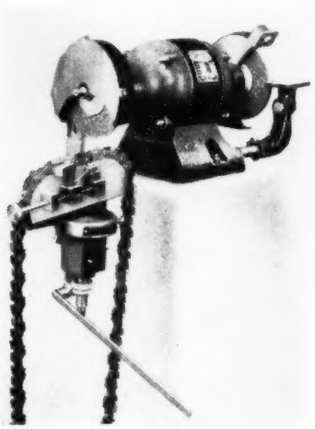
HUNDREDS OF APPLICATIONS

The Disston Chain Saw—Pneumatic—is a powerful, light weight, air-driven tool that speeds up timber cutting for general contractors, railroads, shipyards. Can be operated wherever compressed air is available, even under water. It requires no previous experience to operate, and is ready for work the instant connection is made with air supply.

Gear housing and saw mechanism may be rotated in either direction—handle grips remain in a horizontal position with relation to each other for any type of cutting. Equipped with heavy-duty, vane-type motor. Tail stock, guide rail and cutting chain are the same as those used on Disston gasoline powered saw. Requires little maintenance for it is built for long, economical service.

3½ and 5 h.p. motors in 24" and 36" sizes. The 3½ h.p. motor requires 90 cu. ft. of air per minute, at 90 lbs. pressure per sq. in.; the 5 h.p., 150 cu. ft. of air per minute at 90 lbs. pressure per sq. in.

Write for further particulars, or see your Disston Distributor, who carries complete stocks of parts and is prepared to render prompt and expert service.



DISSTON ELECTRIC CHAIN SAW SHARPENER

enables you to do your own sharpening . . . quickly, accurately. Saves time. Keeps chains in first class condition.

HENRY DISSTON & SONS, INC., 848 Tacony, Philadelphia 35, Pa., U.S.A.

"PERFORMANCE has been PERFECT"

Pioneer 20" x 36" Jaw Crusher Model 150 P.R.L.-2036 and Pioneer 22" x 40" Roll Crusher secondary unit Model 2405 powered by a 4-71 and a 6-71 GM Diesel engine respectively.

It takes a lot of power to crush 1000 tons of large rock a day and turn it into sand and gravel.

That's why the National Truck Service of Asheville, N. C., chose GM Diesels when they set up this rock-crushing plant. Tough GM Diesel power gives them production up to 170 tons per hour at a fuel cost of less than 10¢ per ton.

Because GM Diesels are 2-cycle engines, they provide power at every piston downstroke. They are built to "take it" on tough jobs such as this. They are cleanly designed and "easier to get at" should servicing become necessary. They are compact and easier to install.

All this makes the GM Diesel ideal for all kinds of construction work. If you have a tough, demanding construction job where dependable, low-cost power is a MUST—better get all the facts about these hard-working, husky GM Diesels.

DETROIT DIESEL ENGINE DIVISION

DETROIT 23, MICH. ● { SINGLE ENGINES .. Up to 200 H. P. / MULTIPLE UNITS .. Up to 800 H. P.

GENERAL MOTORS

DIESEL BRAWN WITHOUT THE BULK

GM GENERAL MOTORS DIESEL POWER

TODAY, THE ROAR OF ROCK DRILLS

TOMORROW, THE STEADY FLOW OF COOL WATER

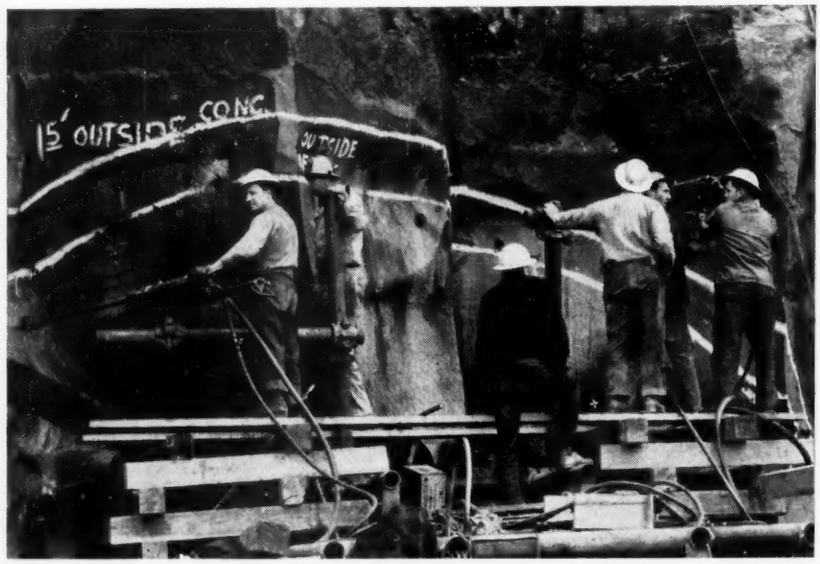
Both wagon drills and jackhammers are on the job near Coulee Dam to clear the way for the gigantic feeder canal. Bethlehem Hollow is slugging it out with tough granite on this location. *Bureau of Reclamation photo.*

These canals and tunnels in the making, part of the Columbia Basin Irrigation Project, soon will carry cool, life-giving water to some 1,029,000 arid acres in the eastern section of the State of Washington.

The long trip south will begin with the pumping of water from the Grand Coulee Dam, thence through the feeder canal to the equalizing reservoir. From there the water will flow through a 1,000-ft concrete siphon and the Bacon Tunnel, nearly two miles in length, to the Long Lake Reservoir, which will feed into broad canals traversing potentially rich farmlands.

The rock excavation involved in this vast undertaking is proceeding at a rapid pace. At both faces of the Bacon Tunnel, at the feeder canal, and at other sites Bethlehem Hollow Drill Steel is speeding the boring of hard rock.

Bethlehem Hollow is the kind of drill steel that the contractors and drill runners prefer. It's tough, fatigue-resisting, and reliable. Blacksmiths depend on it because it forges readily to close dimensions and has a wide quenching range. Whether used for forged-on or detachable bits, there's no better steel for hard-rock drilling.



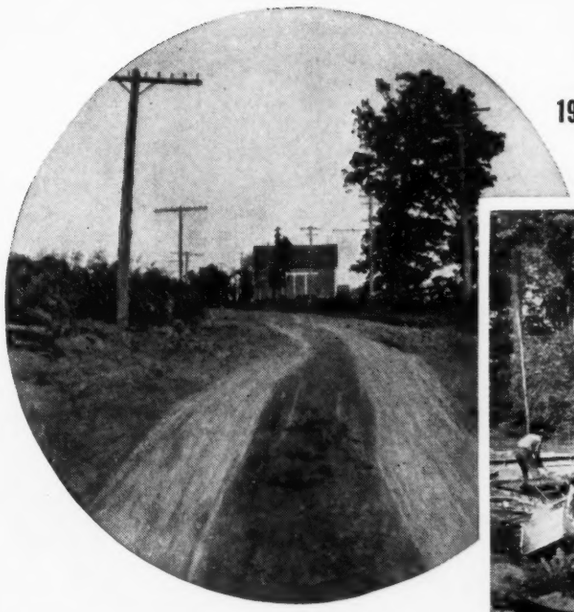
The Bacon Tunnel, in this first round of drilling, is feeling the bite of 1 ¼-in. round Bethlehem Hollow Drill Steel with forged-on bits. The tunnel will be nearly 2 miles in length, 23 ft in diameter. T. E. Connolly, Inc., is the contractor. *Bureau of Reclamation photo.*

BETHLEHEM STEEL COMPANY
BETHLEHEM, PA.

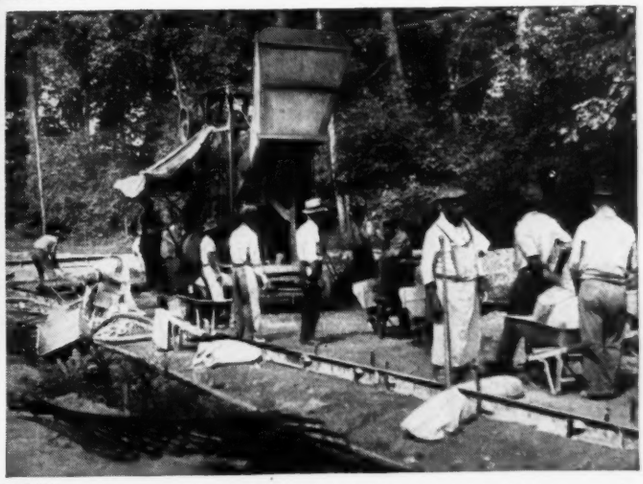
On the Pacific Coast Bethlehem products are sold by Bethlehem Pacific Coast Steel Corporation

★ BETHLEHEM STEEL ★

BETHLEHEM HOLLOW DRILL STEEL



1914 The road that became U.S. Route 22.



1915 Pouring a section of the original concrete paving.

POUNDED BY TRAFFIC FOR 31 YEARS . . . STILL SOUND ENOUGH FOR RE-SURFACING

1916 High-ranking dignitaries officiate at the opening of the highway.

▪ In 1915, cement and aggregate producers cooperated with the Pennsylvania State Highway Department in touching off its present vast highway network by paving Route 22 between Easton and Bethlehem with concrete.

During the 31 years that followed, traffic over this Route far outweighed expected loads. Plans are now underway to relocate the Route, yet today the original paving is sound enough to furnish a base for re-surfacing so as to carry the traffic until the new road is completed.

For 50 years, Lehigh Cements have given strength and dependability to every type of concrete construction. The Lehigh Service Department will gladly consult with you on your specific problems.

LEHIGH PORTLAND CEMENT COMPANY
ALLENTOWN, PA. ▪ CHICAGO, ILL. ▪ SPOKANE, WASH.

LEHIGH EARLY STRENGTH CEMENT
LEHIGH AIR-ENTRAINING CEMENT
LEHIGH NORMAL CEMENT
LEHIGH MORTAR CEMENT

Lehigh CEMENTS

1947 Pouring concrete made with Lehigh Air-Entraining Cement to widen a section of the existing road.
Contractor: Kingston Contracting Company, West Point, Pa.

HOW NEW KB INTERNATIONALS ARE
Masterfully Specialized to their Jobs

New KB Model Internationals are the finest values in International Truck history. And International values are so outstanding that for 16 years more heavy-duty Internationals have served American commerce and industry than any other make.

But rugged quality is only one reason for International leadership. Another is International's masterful ability to *specialize* trucks to their jobs.

There are 15 basic KB Internationals. Gross weight ratings range from 4,400 to 35,100 pounds. Ten different engines are used. Axles, transmissions and tandems are available for every requirement.

International *specializes* its 15 basic KB Models into more than 1,000 different type trucks—a result of 40 years experience, engineering skill and matchless facilities. *That's fitting the truck to the job!*

Now add this: International can accurately tell every operator just what his maximum loads should be in terms of the exact conditions under which his trucks operate—an exclusive International service that enables the operator to get the most in operating economy, low maintenance costs, and long, trouble-free performance.

For details of new KB Internationals, *expertly specialized,* see your International Dealer or Branch.

Motor Truck Division
INTERNATIONAL HARVESTER COMPANY
180 North Michigan Avenue Chicago 1, Illinois

40TH ANNIVERSARY OF INTERNATIONAL TRUCKS
1907-1947—Forty Years of International Truck Service to Industry, Commerce and Agriculture

INTERNATIONAL

INTERNATIONAL *Trucks*

AIR PLUS JAEGER COMPRESSOR

get your air costs

down to today's

Jaeger figures

Here's why Jaeger air COSTS LESS . . .

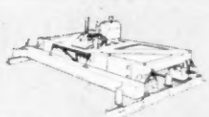
75% to 100% larger "Tough Swedish Twin" valves, ultra-lapped to leakproof closure — 20% to 30% slower, cooler piston speed — 100% efficient intercooling — force feed lubrication—balanced, precision parts —mean smoother, vibrationless performance, free air flow without the usual heat, carbon and power-wasting back pressure — more air from every pound and dollar of fuel and much lower cost of upkeep with compressor units that outlast their original engines* 3-to-1.

(*Caterpillar, Continental and International powered.)

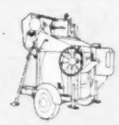
Your Jaeger distributor is today supply headquarters for contractors in your locality who are applying modern *low-cost* air power to their work. He handles the finest air tools, engines and compressors on the market — he knows air — he is an important link in a chain of 128 Jaeger air stations across the U. S. and Canada which give on-the-spot service to contractors wherever their jobs may be.

THE JAEGER MACHINE COMPANY, Columbus 16, Ohio

REGIONAL OFFICES
8 E. 48th St. NEW YORK 17, N. Y.
226 N. La Salle St. CHICAGO 1, ILL.
235-38 Martin Bldg. BIRMINGHAM 1, ALA.



JAEGER Spreaders, Finishers



"SPEEDLINE" Concrete Mixers

"SURE PRIME" Contractors Pumps

JAEGER *Engineered* **EQUIPMENT**

"DUAL-MIX" TRUCK MIXERS, AGITATORS — HOISTING ENGINES, SELF-RAISING TOWERS — CONCRETE AND BITUMINOUS PAVING EQUIPMENT

OVER TWENTY YEARS SERVICE

"No major repairs!"

Outstanding production records are an old story to Bucyrus-Erie excavators, which have consistently piled up long hours of operation with low maintenance costs. Take this Bucyrus-Erie 30-B dragline, for instance. Here is part of a letter received from Mr. J. G. MacLachlan, manager of the Hudson Bay Railway, Manitoba, Canada:

"The machine has been in continual seasonal operation since September, 1926 . . . has excavated 100 miles of side and off-take ditches, largely in permanently frozen ground, and other excavations to a total of approximately 1,000,000 cubic yards. We have had to make no major repairs."

There is no magic formula for the long life of Bucyrus-Eries. Durable parts in an efficient basic design; easily-made, long-lasting adjustments; simple, effective lubrication — all these play an important part in keeping Bucyrus-Eries on the job year in, year out, with a minimum of "time out" for repairs and with consistently economical operation.

Your Bucyrus-Erie distributor can show you why today's Bucyrus-Erie ⅜ to 2½-cu. yd. excavators can be depended upon for long service and still be "easy on the upkeep." Let him give you more information.

BUCYRUS-ERIE CO.
SOUTH MILWAUKEE, WISCONSIN

99E47

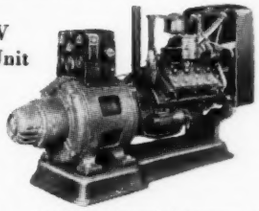
KRW INDUSTRIAL POWER PLANTS

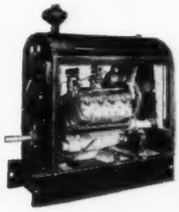
CUT COSTS 40-50%... THIS NEW BOOK GIVES ALL FACTS ABOUT THESE FAMOUS LOW COST FORD-POWERED, EASILY SERVICED UNITS... THOUSANDS IN DAILY USE

Write for it today!

CUT POWER OR PUMPING COSTS IN HALF WITH
KRW INDUSTRIAL POWER UNITS
DEPENDABLE ECONOMICAL FORD POWER
KRW UNITS operate on GASOLINE, NATURAL GAS, BOTTLED GAS
OPERATING COSTS PER HOUR
THE 100-H.P. FORD V-8

KRW 20KV Generating Unit





KRW Industrial Power Unit (enclosed type)

KRW Special Pumping Unit

● **Powered by the famous Ford V-8—100 H. P. Truck Engine, KRW Industrial Power Units operate on Gasoline (tax free), Natural Gas or Butane. Their maintenance and repair cost is held at a minimum because of around-the-corner and world-wide, low-cost Ford service and the Ford Engine and Parts Exchange Plan. Mail the coupon for this informative book today.**

K. R. WILSON
BUFFALO 3, NEW YORK

25

K. R. WILSON, 215 Main St., Buffalo 3, N. Y.

Please send me a copy of the new KRW Industrial Power Unit Book.

Name.....

Address.....

City and Zone.....*State*.....

You make money
Extra Capacity

MORE YARDS per trip

MORE TRIPS per hour

MORE HOURS per season

LETOURNEAU EQUIPMENT

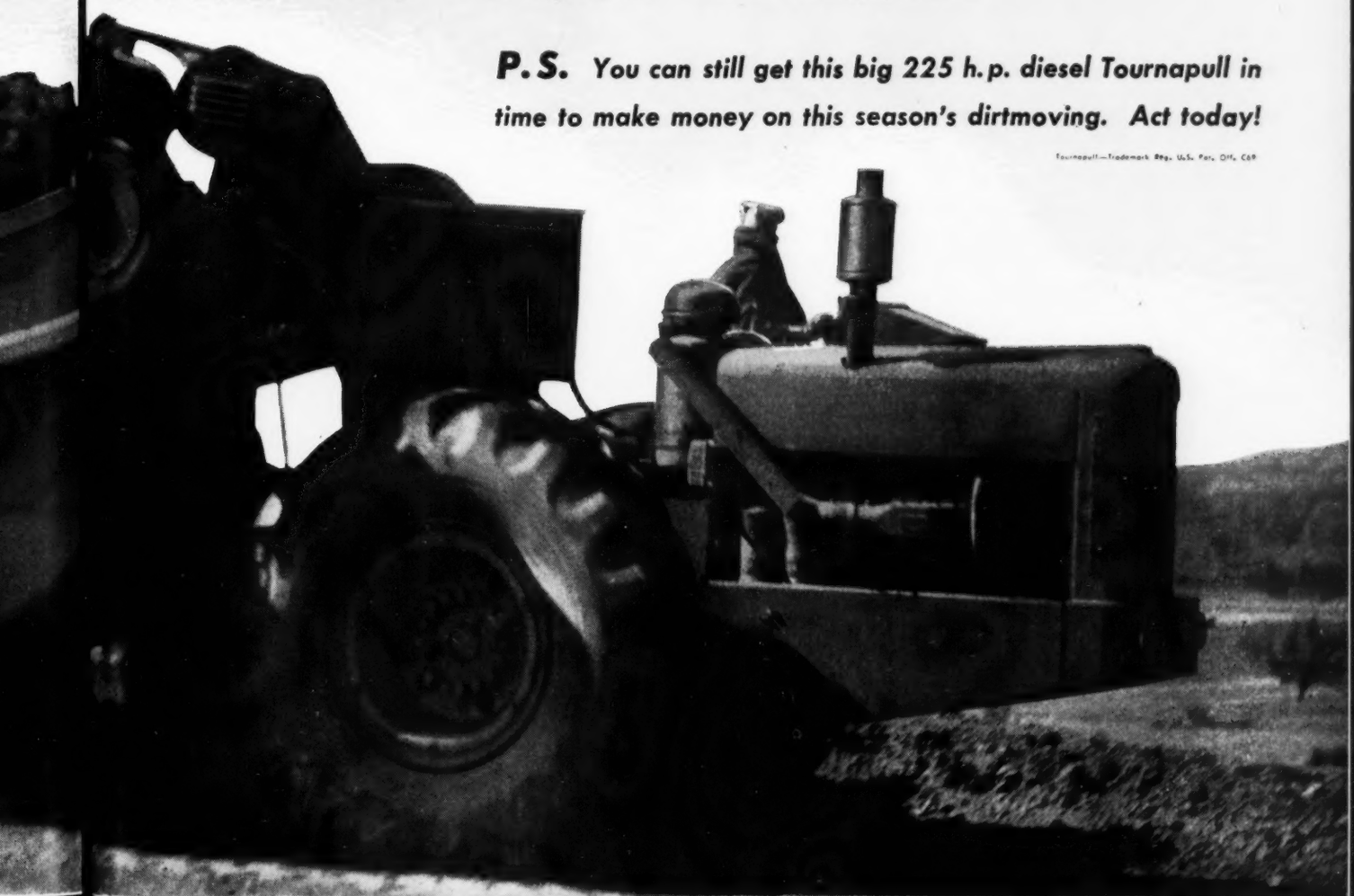
See your LeTourneau Distributor NOW for complete information on prices and delivery

three ways with "B" TOURNAPULLS

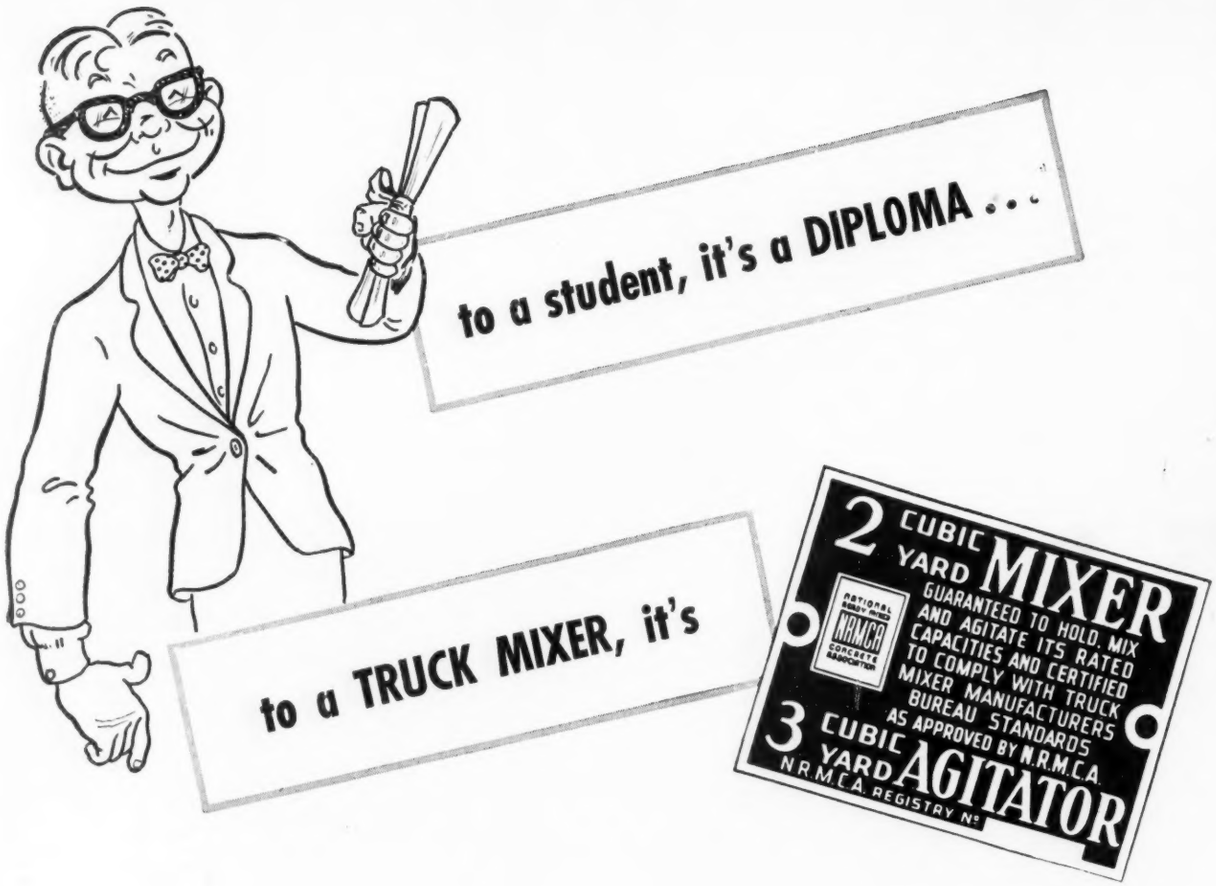
FIGURE IT THIS WAY. On big yardage jobs the new 26-yard "B" Tournapull hauls over twice the usual scraper pay load every trip . . . doubles your dirtmoving output per man-hour . . . cuts your operating and maintenance costs practically in half. And that's only part of the story. Travel speeds up to 15 m.p.h. plus finger tip electric control . . . instantaneous shifting and braking . . . safe, easy power steering . . . all help deliver extra pay yards at the fill with minimum operator fatigue. In addition, because this powerful new "B" Tournapull walks right through deep mud, sand, snow and ice that would stall ordinary dirtmovers, you can start jobs earlier in the spring . . . keep moving dirt all season with fewer and shorter delays from weather . . . keep working later in the fall . . . make each year pay off in extra pay hours.

P.S. *You can still get this big 225 h.p. diesel Tournapull in time to make money on this season's dirtmoving. Act today!*

Tournapull—Trademark Reg. U.S. Pat. Off. C69



LETOURNEAU PEORIA, ILLINOIS — EXTRA-CAPACITY TOURNAPULLS


to a student, it's a DIPLOMA . . .
to a TRUCK MIXER, it's
2 CUBIC YARD MIXER
GUARANTEED TO HOLD, MIX AND AGITATE ITS RATED CAPACITIES AND CERTIFIED TO COMPLY WITH TRUCK MIXER MANUFACTURERS BUREAU STANDARDS AS APPROVED BY N.R.M.C.A.
3 CUBIC YARD AGITATOR
N.R.M.C.A. REGISTRY Nº
NRMCA

One of life's greatest moments to the school boy is the presentation of a diploma. It's his certificate of success . . . his mark of achievement.

To a truck mixer, the rating plate of the Truck Mixer Bureau represents something very similar. It is equally representative of achievement . . . of a successful passing of the standards set up by the Bureau for your protection. The rating plate is your guarantee of full rated capacity. You don't guess . . . you know the exact capacity of the mixer.

Truck Mixer Manufacturers Bureau

Affiliated with the National Ready Mixed Concrete Association

BLAW-KNOX DIVISION Pittsburgh, Pa.	CONCRETE TRANSPORT MIXER CO. St. Louis, Mo.	RANSOME MACHINERY COMPANY Dunellen, N. J.
CHAIN BELT COMPANY Milwaukee, Wis.	THE JAEGER MACHINE COMPANY Columbus, Ohio	THE T. L. SMITH COMPANY Milwaukee, Wis.

HERE'S HOW A ONE HUNDRED PERCENT MORETRENCH WELLPOINT SYSTEM CAN KEEP YOUR JOB PROGRESSING

IN THE DRY!

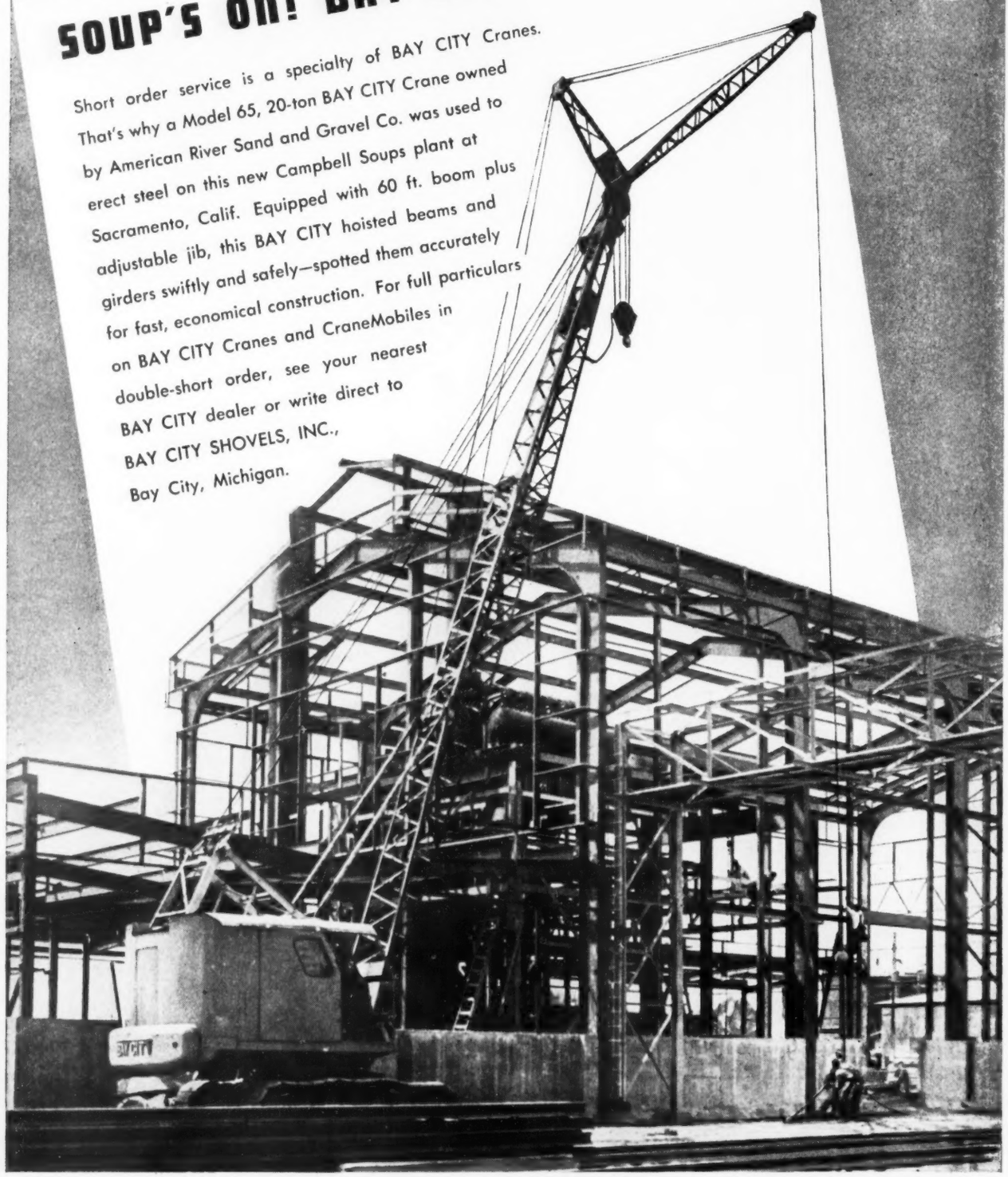
When water is your problem, MORETRENCH is the answer.

MORETRENCH CORPORATION

90 West St. New York 6 | 3037 S. Christiana Ave. Chicago 23, Illinois | 2424 Chicago Ave. Tampa 6, Florida | 315 W. 25th St. Houston 8, Texas | Rockaway New Jersey

SOUP'S ON! BAY CITY DISHES UP

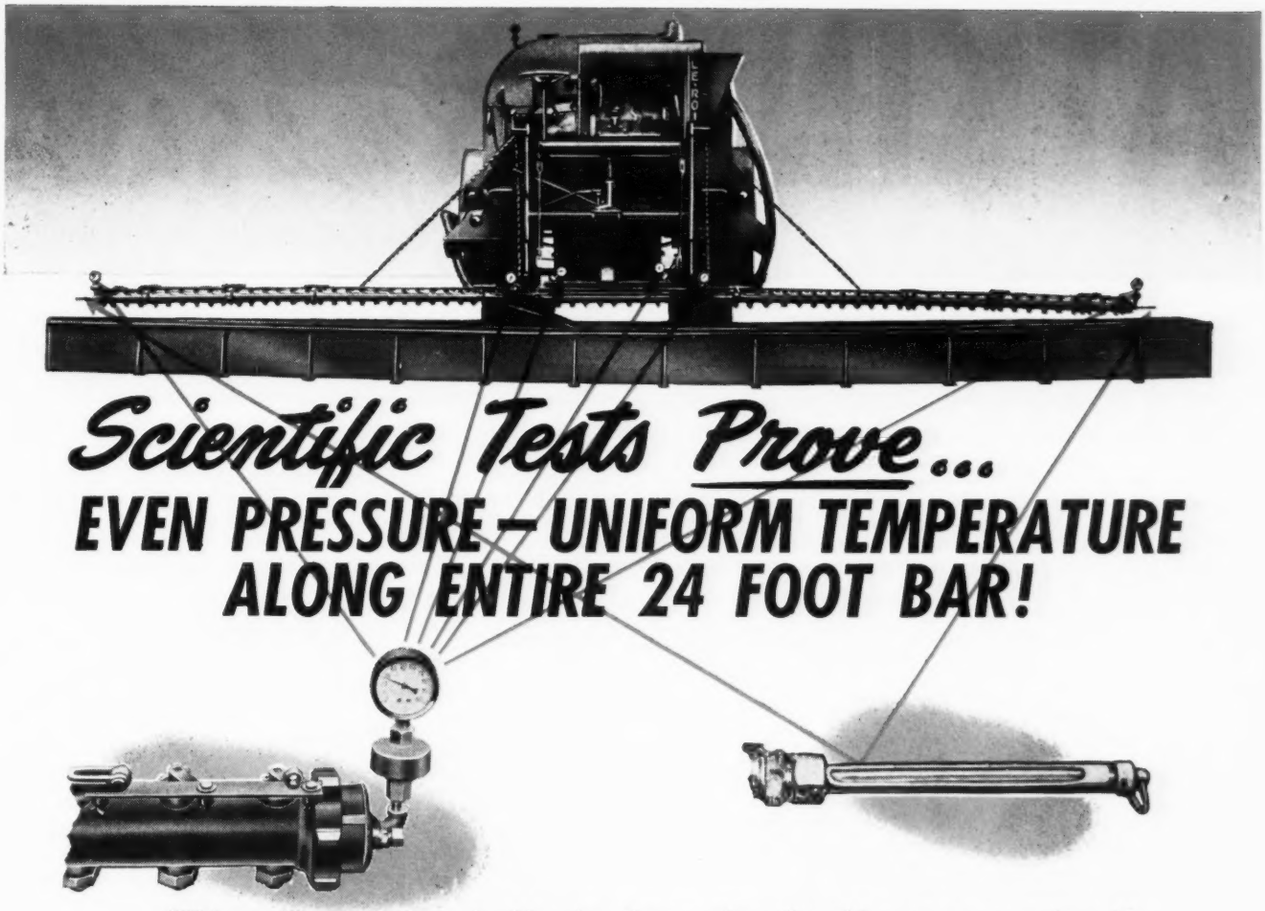
Short order service is a specialty of BAY CITY Cranes. That's why a Model 65, 20-ton BAY CITY Crane owned by American River Sand and Gravel Co. was used to erect steel on this new Campbell Soups plant at Sacramento, Calif. Equipped with 60 ft. boom plus adjustable jib, this BAY CITY hoisted beams and girders swiftly and safely—spotted them accurately for fast, economical construction. For full particulars on BAY CITY Cranes and CraneMobiles in double-short order, see your nearest BAY CITY dealer or write direct to BAY CITY SHOVELS, INC., Bay City, Michigan.



BAY CITY

SHOVELS • DRAGLINES • CRANES • HOES • CLAMSHELLS

SEE YOUR NEAREST DEALER for Bay City excavating and material handling equipment in sizes from 3/8 to 1¼ yards having crane rating up to 20 tons. Both crawler and pneumatic tire mounting.



Scientific Tests Prove...

EVEN PRESSURE—UNIFORM TEMPERATURE ALONG ENTIRE 24 FOOT BAR!

With precision instruments in this exhaustive test pictured on this page, we prove that with a *STANDARD STEEL WORKS' Spray bar*—YOU will get exactly the same pressure over every inch of the bar, and temperature is unvarying right to the extreme tips of the bar!!!

This Scientific Spray Bar Test was made at 40° Fahrenheit, outside temperature. Six pressure gauges were placed along the entire 24′ length, full circulating spray bar. A pencil-type thermometer was located at each end of the bar. *STANDARD STEEL WORKS' Full Circulating Spray Bar* on discharge, produced 28 lbs. even pressure at each gauge across the entire 24′ length of bar. Temperature gauges indicated 350° Fahrenheit. The temperature dropped between the tank and the spray bar, exactly 4°.

85-100 PENETRATION *(Heavy Oil)*
STANDARD STEEL DISTRIBUTOR

OPERATION	GAUGES 1	2	3	4	5	6	ENG. R.P.M.	TEMPERATURE LEFT END	RIGHT END
SPRAY	28	28	28	28	28	28	300	350°f	350°f
"BEST COMPETITIVE MAKE"									
SPRAY	37	35	42	41	43	43	300	290°f	280°f

The chart at the left indicates the exact pressure at each pressure gauge, along the entire 24′ length of spray bar. 85-100 penetration asphalt was used in making this test. The competitive machine, identified in this chart as make "A", under identical conditions, had a pressure variation of 8 lbs., and a *drop in temperature of 64°* at one end and a drop of 74° at the other end of bar.

The STANDARD STEEL WORKS' Model 424 Pressure Distributor with *Full Circulating Spray Bar* offers the CONTRACTOR, ENGINEER, and OPERATOR, *fast, accurate application—no delays due to frozen spray bar sections—no lean or fat spots* to give trouble. *Uniform pressure throughout the entire spray bar*—absolutely assures even application of material on the road bed. *Job always completed on time.*

Built to the Highest
Standard

Standard Steel Works
NORTH KANSAS CITY, MO.

MAIL COUPON TODAY FOR COMPLETE DETAILS

Gentlemen: Send me at once, your complete catalog and test data on the Model 424 Pressure Distributor, as shown in Catalog 6145.

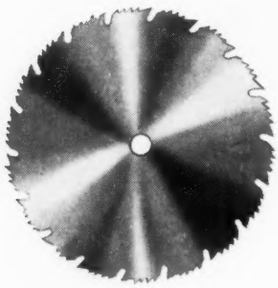
Company_____
Name_____
Title_____
Address_____
City_____ State_____

ATKINS *Silver Steel* SAWS

He'll do better—with better saws

1.

2.



3.

What a difference—when you equip your workers with Atkins Saws! Whether it's crosscuts for heavy-duty sawing . . . blades for power machines . . . handsaws for all-round work . . . with Atkins Saws your men will find the going easier and faster. Atkins Saws are correctly designed for their special purposes. And they're rugged . . . they'll come through the toughest test with flying colors. That famous "Silver Steel" builds extra stamina into Atkins Saws. It puts a sharper edge on the teeth, too—an edge that lasts. You'll notice less out-time for filing and setting.

Whatever kind of saw you need, Atkins has it. Atkins line of better saws includes chain saws, hacksaws and blades, coping saws, compass saws and many special types. They'll help your men do better work . . . boost your production . . . lower costs.

1. "Segment grinding" makes Atkins Crosscuts clear perfectly, eliminates pinching. Atkins No. 9 is one of a full line of "Silver Steel" Crosscuts.

2. Sawing's easier with this Atkins No. 65 Straight Back Handsaw—it has the improved "Perfection" handle. All types of handsaws available from Atkins.

3. Atkins No. 37 Mitre Tooth, one of a complete line of Atkins "Silver Steel" Circular Saws, is a combination rip, crosscut and mitre saw. Ideal for portable power saws and power tables.

E. C. ATKINS AND COMPANY

Home Office and Factory: **402 S. Illinois Street**
Indianapolis 9, Indiana

Branch Factory: **Portland, Oregon**

Branch Offices: **Atlanta • Chicago • Memphis • New Orleans • New York • San Francisco**

AAA ATKINS

SURFACE SMOOTHNESS is its business

• Engineered from the ground up for precision operation, the Austin-Western Tandem Roller with its—

Variable Weight — **Rigid Box Frame**
Smooth Power — **Hydraulic Steer**
More Visibility — **Less Overhang**
More Clearance
Convenient Single or Dual Controls

meets all specifications for high-type surfaces . . . performs in a manner that satisfies the most exacting engineer.

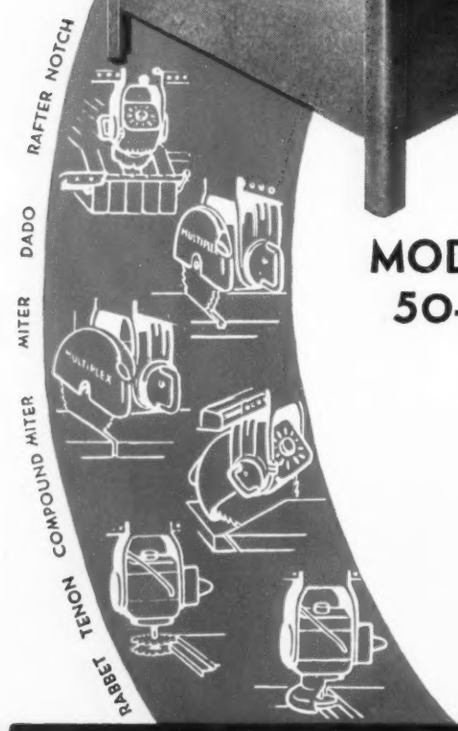
The Austin-Western Line also includes 3-Wheeled Rollers. Catalogs yours for the asking.

AUSTIN-WESTERN COMPANY, AURORA, ILLINOIS

BUILDERS OF ROAD MACHINERY
Austin Western
SINCE 1859

MORE PRODUCTION —

with Greater Ease of Operation



MODEL 50-A

THE NEW "MULTIPLEX" 50A is especially designed to handle heavier work in greater capacities -- and to do it faster, more accurately and with greater ease of operation.

Lumber yards, general contractors and industrial users will find this new streamlined MULTIPLEX the most versatile performer of any radial arm saw.

- Left Hand Miters -- in the same 100% range as right hand miters.
- Exclusive Versatile Elbow or center suspended track means unlimited saw positions.
- Movable Table provides for greater capacity cuts -- permits full usable travel of the cutting head in any cross cut, miter or rip position.
- Ball Bearing Assembly -- has self cleaning balls running on nitralloy rods for ease of cutter head operation.
- Automatic Recording Rip Scales -- provide an accurate and convenient means of measuring width of rip.

The new model 50-A is available with motor ratings of 3, 5, 7½ or 10 H.P.

For greater production and operating economy investigate this New "MULTIPLEX."

Write for full information and name of nearest dealer.

MULTIPLEX
Radial-Arm Saws

RED STAR PRODUCTS • INC.
3455 VEGA AVENUE, CLEVELAND, OHIO, U. S. A.

What becomes of them?

Last night another trainload of "Caterpillar" products rolled out of the yards. With the factory's peacetime production at an all-time high, such scenes are of daily occurrence.

So, you ask, why the "scarcity"? . . . What becomes of all these thousands of Diesel-powered tractors, engines, motor graders and units of earthmoving equipment?

That's a fair question. Especially if you are a customer who has been patiently awaiting delivery on an order. Here is the answer:

"Caterpillar" products have gained unprecedented demand that takes time to supply. It is a demand that has been built up through sheer excellence of quality . . . through tireless engineering research and job study that have made them better and better . . . through their illustrious war record and their versatility for serving many industries.

In fact, "Caterpillar" power has become woven into the very fabric of our economy and progress. Big-scale utility, reclamation and conservation projects could scarcely proceed without it. Agriculture needs it. Logging demands it. It is a "must" on highway construction and maintenance. Mining, excavating, quarrying, oil drilling, community lighting, fishing, hatcheries, milling, cotton-ginning, machine shops, switching locomotives, factories—all find "Caterpillar" power a key to a successful public service.

So, you see, the "world of 'Caterpillar' Diesels" is a big one. The needs that "Caterpillar" must supply are many. The ultimate destinations of every trainload of "Caterpillar" products are widely scattered.

To allocate the factory's output is no small problem. Apportionment is fair—by regions and by industries. Priority of orders is the reasonable basis for customer deliveries. "Caterpillar" subscribes firmly to that principle. So do "Caterpillar" dealers, whose responsibility it is to carry it out. Each is a businessman of ability and integrity, who merits the confidence of his customers and his company.

Caterpillar Tractor Co., San Leandro, Calif.; Peoria, Ill.

Start-and-Stop fleet gets low-cost maintenance with . . . . .

Stanolube HD

Super-X Delivery Co.
LIGHT AND HEAVY HAULING
MINNEAPOLIS: MAIN 0571
310 SO. 6TH ST.
MINNEAPOLIS, ... MINN.

Standard Oil Co.
Mr. W. T. Bannister, Mgr.
Minneapolis, Minn.
Att'n: Mr. P. L. Sheaff

Gentlemen:

This is to inform you that since May, 1943, we have used your Stanolube H. D. Motor Oil exclusively in our fleet of twenty trucks consisting of Fords, Chevrolets, Dodges and Reos.

As our operation involves a great deal of start-and-stop driving - and consequent motor idling - only the best lubrication will keep motors in operation and free from carbon forming deposits.

In the four years that we have used your Stanolube H. D., our maintenance costs have been remarkably low due to the long periods between any necessary overhauls on motors.

We are happy to recommend this Heavy Duty Motor Oil to all fleet owners.

Yours truly,
SUPER-X DELIVERY COMPANY
BY

Well-qualified judge of motor oil performance is Mr. Charles Pinkus, who wrote the letter reproduced at left. As superintendent of the Super-X Delivery Fleet he is responsible for the operation of 20 units. He has used Stanolube HD for more than four years. The advantages he credits to the oil are easy to understand. Stanolube HD was developed scientifically to reduce maintenance costs of fleet operation.

Carbon formation, caused by excessive idling, is reduced because the base stocks in Stanolube HD are free from carbon-forming heavy ends.

Maintenance costs are low both because carbon formation is reduced and because solvent refining plus the use of oxidation inhibitors helps Stanolube HD resist heat—minimizing ring deposits, cylinder and bearing wear.

The performance of this superior heavy-duty motor oil in your fleet will be another strong recommendation. Ask a Standard Oil Automotive Engineer to test Stanolube HD in one of the hard working units in your fleet. Write Standard Oil Company (Indiana), 910 South Michigan Avenue, Chicago 80, Illinois.

STANDARD OIL COMPANY (INDIANA) STANDARD SERVICE

a thousand and one

MACWHYTE WIRE ROPES

When you use the correct wire rope, both the rope and your equipment last longer, cost less to operate. Macwhyte consulting engineers will check your equipment and recommend the wire rope specifically engineered for your job. Ask your Macwhyte distributor, or write Macwhyte Company.

... all job-proved... assure you the correct rope for your equipment

make MACWHYTE your headquarters for WIRE ROPE and SLINGS

MACWHYTE PREFORMED AND NON-PREFORMED INTERNALLY LUBRICATED WIRE ROPES... MONARCH WHYTE STRAND Wire Rope ...Special Traction Elevator Rope ...Stainless Steel Wire Rope ...Monel Metal Wire Rope... Galvanized Wire Rope... Atlas Braided Wire Rope Slings, Hi-Fatigue Aircraft Cables, Assemblies and Tie-Rods. Catalogs on request.

NO. 918

MACWHYTE WIRE ROPE

Manufactured by Macwhyte Company
2941 Fourteenth Avenue, Kenosha, Wisconsin

Mill Depots: **New York · Pittsburgh · Chicago · Minneapolis · Fort Worth Portland · Seattle · San Francisco · Los Angeles**
Distributors throughout the U.S.A. and other countries

when you need a perforated bucket

BUY PAGE you'll get all the superior digging advantages of the PAGE AUTOMATIC

Page Perforated Automatic Bucket

All AUTOMATICS are rated by standard measurement — a 1 cu. yd. bucket is capable of carrying 1 cu. yd. or more.

PAGE perforated buckets are guaranteed to outdig ordinary dragline buckets at any depth and to have less pounds pull on the machine. They are as light as, and in some cases lighter than, ordinary perforated buckets. Perforations are placed only where needed to release water and not for reducing the weight of the bucket. Actually, perforations save less than 1% of the total weight. Too many holes only weaken the bucket.

Unlike ordinary buckets, the Perforated AUTOMATIC will not push up a windrow. It digs in immediately at the first pull on the drag rope and will get a full load within one or two bucket lengths. Page, the inventor of perforated buckets, offers you the best digging bucket possible to serve you profitably. When buying a bucket for wet digging, insist upon a Page Perforated AUTOMATIC.

PAGE ENGINEERING COMPANY — CLEARING POST OFFICE, CHICAGO, ILLINOIS

PAGE *Automatic*

DRAGLINE BUCKETS *and* WALKING DRAGLINES

Write for new booklet "How to Get the Most Out of Your Page Automatic Dragline Bucket."

For the *Toughest* Service on Powered Wheels

The

GENERAL L C M

for *Logging Construction Mining*

New Angle Pulling Power
More Rubber • Greater Traction

Squeegee Power Cleats • Ejection Action

Snag-Resistant Tread and Sidewall
Heavy Shock-Absorber Plies

Buttressed Highway Rib • Reinforced, Extra Heavy Beads

Natural Rubber Impact Cushion
Deeper, Cool-Running Shoulders

The GENERAL L.C.M.

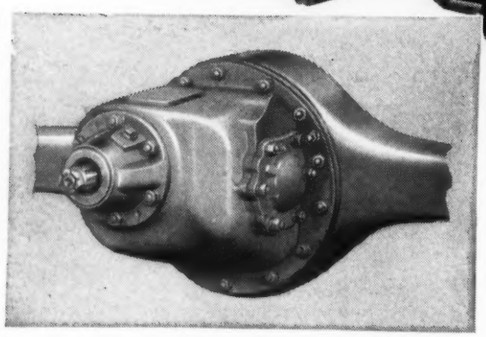
THE GENERAL TIRE & RUBBER CO. • AKRON, OHIO

HYPOID-HELICAL
DOUBLE-REDUCTION FINAL DRIVE

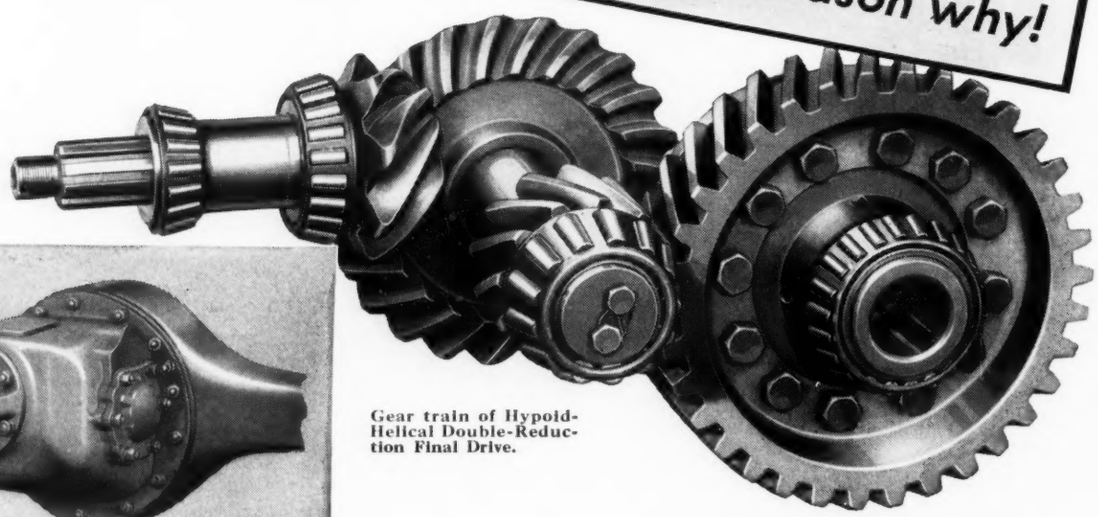
TIMKEN 3 for 1 AXLES

THE FINAL ANSWER TO FINAL DRIVE PROBLEMS

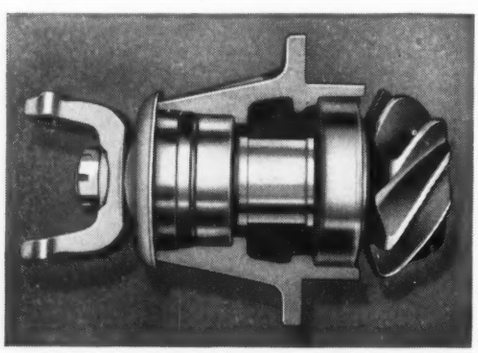
Another reason why!



Hypoid-Helical Double-Reduction Final Drive (medium- and light-heavy-duty series)—carrier mounted to housing.



Gear train of Hypoid-Helical Double-Reduction Final Drive.



Hypoid pinion bearings mounted in removable pinion cage (cage shown cut away). Bearing adjustment is obtained by a selected thickness spacing washer which is hardened and ground.

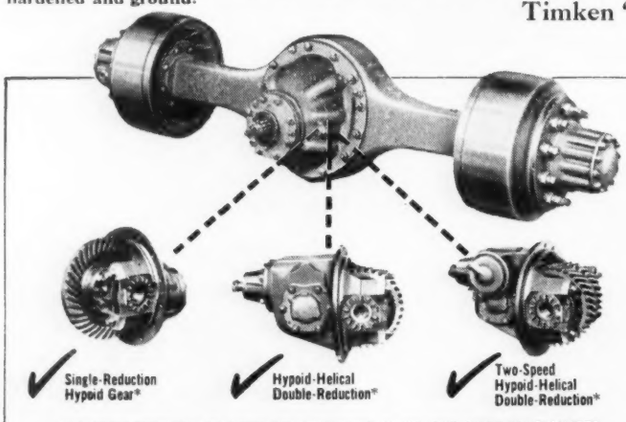
Why are vehicle manufacturers, dealers and operators unanimous in praising Timken "3 for 1" Axles as the final answer to final drive problems?

There are many reasons: Timken Advanced-Related Design—interchangeablity of final drives and parts—low maintenance.

Take, for example, this Timken Hypoid-Helical Double-Reduction Final Drive. Here are a few of its design features:

- **Hypoid gear and pinion for first gear reduction.**
- **Wide-faced helical gear and pinion for second gear reduction.**
- **All bearings adjustable.**
- **Symmetrical differential cases machined from steel forgings of generous proportions, providing rigid support for helical gear.**
- **Helical pinion integral with cross-shaft.**
- **Large diameter cross-shaft for rigidity.**
- **Shim adjustment of cross-shaft bearings. Shim adjustment for positioning of hypoid pinion with gear.**
- **Differential carrier legs supported in the axle housing.**

If you want the only postwar axles of Advanced-Related Design, look under the next new trucks you buy! Specify Timken "3 for 1" Axles.

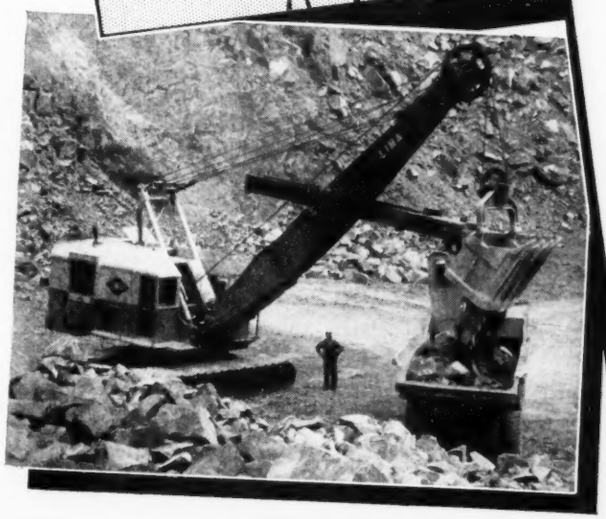


*INTERCHANGEABLE IN SAME AXLE HOUSING USING THE SAME AXLE SHAFTS

TIMKEN
3 for 1 AXLES

THE TIMKEN-DETROIT AXLE COMPANY
DETROIT 32, MICHIGAN
WISCONSIN AXLE DIVISION, OSHKOSH, WISCONSIN
TIMKEN AXLE BRAKE DIVISION, DETROIT, MICHIGAN

SERVICE
FROM COAST TO COAST



The type of work that is done by a shovel, crane or dragline places it in a class by itself when it comes to taking punishment. Heavy excavating, overloading, improper care all take their toll. We at LIMA go the limit to build equipment that will withstand a normal amount of rough usage but regardless of how well a machine is built, there are times when parts must be replaced. Our interest in a customer does not end with the sale and delivery of a shovel, crane or dragline. We are ever ready to serve you at a moments notice as long as the machine is in service. A complete record of each machine we build is preserved so that when a part is ordered the customer can be sure that it will fit accurately. Parts are shipped the same day the order is received whenever possible. Special attention will be given to your request for parts service from headquarters located in the cities shown on the above map.

LIMA LOCOMOTIVE WORKS, INCORPORATED

Shovel and Crane Division · Lima, Ohio, U. S. A.

THE LIMA DIAMOND

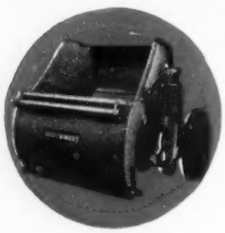
FOR OVER 75 YEARS AN EMBLEM OF QUALITY WORKMANSHIP

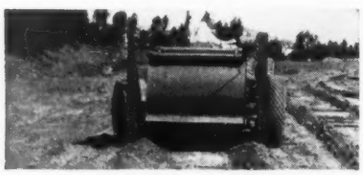
LIMA

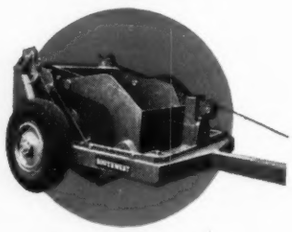
LIMA

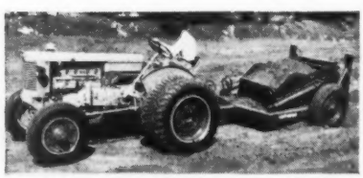
Capacities . . . SHOVELS ¾ YARD TO 5½ YARDS · CRANES 13 TONS TO 100 TONS · DRAGLINES VARIABLE

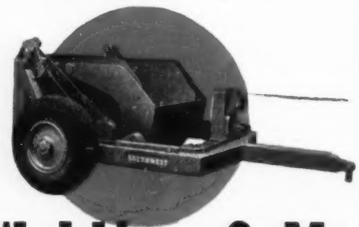
NOW - SOUTHWEST BUILDS *Both Hydraulic* AND *Cable* CONTROLLED HAULING SCOOPS











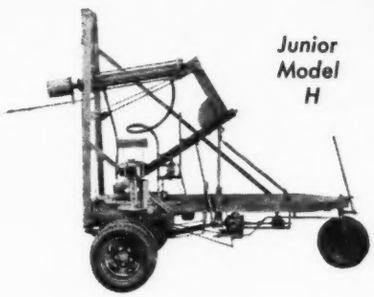
THESE TWO TYPES of hauling scoops, "BUILT BY SOUTHWEST," provide complete maneuverability and control on every job. Both types assure easy loading and positive ejection of all materials. Pivots behind the wheels make over-bank dumping and other fill work a simple operation. The load can be discharged while moving forward, backward or standing still. A CONTROLLED SPREADING feature permits spreading to job specifications.

CONSTRUCTION MACHINERY DIVISION

Southwest Welding & Manufacturing Co.

ALHAMBRA CALIFORNIA

UNEQUALED FOR TAMPING TRENCH AND BRIDGE APPROACHES

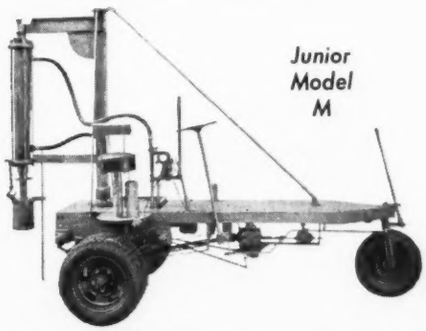


Junior Model H

RAPID

PAVEMENT BREAKER MACHINES

- Model-H can be converted to vertical machine in 30 minutes.
- Junior Model T for mounting on truck with compressor also available.
- Write for details and prices.



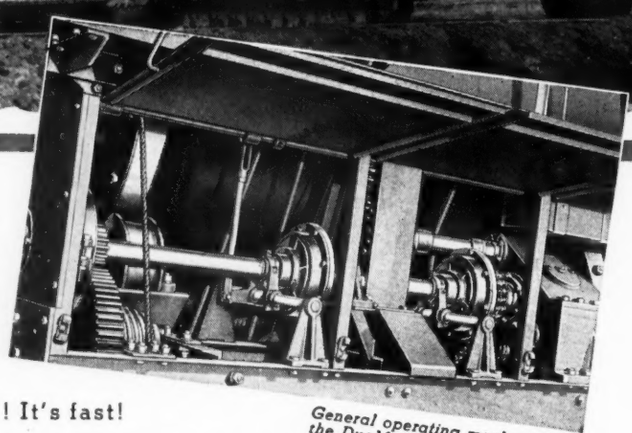
Junior Model M

- Unequaled performance in concrete breaking.
- Fastest pneumatic method.
- Not a drop weight, but a pneumatic controlled blow.
- Average working speed, 55 blows per minute.
- Saves labor-time-dollars.
- Built to have a low upkeep cost.
- Breaks to any size desired.
- Adapted to inside or outside work.
- Increases your compressor output.
- Ideal for cutting trench and tamping backfill.
- The profitable addition to your line of equipment.
- Heavy-duty machine equipped with air motor which pivots the unit on the truck bed.
- Junior Trailer Models are equipped with air motor that propels machine and swings the boom.

R. P. B. CORP.

1517 Santa Fe Ave. Los Angeles 21, Calif.

Built to keep "a-running"!



General operating mechanism of the DuoMix. Note the simplicity! Fewshafts, few gears mean accessability, easy adjustment, easy maintenance. The MultiFoote is built to keep a-running.

Have you seen the MultiFoote DuoMix 34-E Paver? If you are planning on new paving equipment be sure you see it and get all the details on this unusual double drum equipment.

It's built to keep a-running! It's powerful! It's simple in design! It's fast!

Lift the doors under the deck. You will be amazed at the small amount of machinery. It means easy upkeep—low-cost maintenance. Unusual crawler design with a self-cleaning type of action gives the MultiFoote low ground bearing pressure and makes it light on its feet.

The rotary transfer and discharge; the big, fast-acting skip; the high-speed bucket with its simple outside door action; mean seconds saved in getting the batch to the grade.

Add to this the power-operated superstructure for low clearance, the high operating platform for clear visibility, the no-pressure water system and other MultiFoote advantages, and you can see why it's the smoothest, fastest Double Drum Paver on the road today. Ask for the latest catalog.

THE FOOTE CO., INC.
1910 STATE STREET
NUNDA, N. Y.

MULTIFOOTE
Duomix 34E
(DUAL DRUM)
CONCRETE PAVERS

Builders of

Adnun BlackTop Pavers,
MultiFoote Concrete Pavers,
and Foote Kinetic Mixers

½ the Time : ½ the Cost

New System of Form Construction Offsets Today's High Costs

Patents Pending

All steel, but light weight—even a five year old can lift them.

FLAT SLAB FORMS—Cut your labor costs in half, your cost of forms to 1¢ per sq. ft. with Atlas SPEED Forms. Steel Forms—light in weight, fireproof. They give a uniform surface free from grain marks and knot holes. They do not warp or swell.

One large contractor finds it pays him to import Atlas SPEED Forms to his Far East job, half way round the world, with local lumber and cheap labor available.

Can you afford to overlook the savings with high-priced American labor? Let us show you how much you can cut your costs. SPEED Forms go together with wedge bolts and clips. Easily assembled with a hammer . . . no special wrenches or tools needed. No nailing. No joists on slabs—no studs on walls. Can be easily erected and stripped in half the time and at HALF the cost of wood.

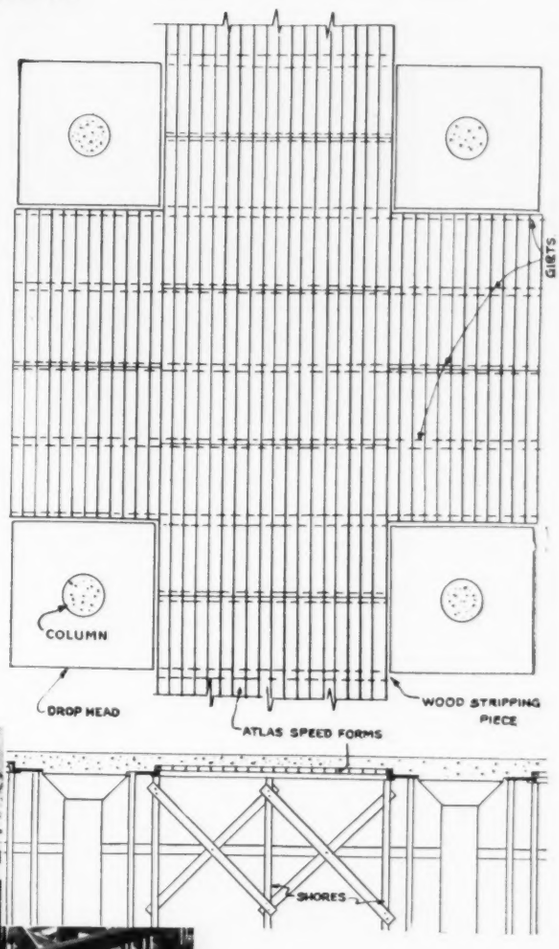
Available Now for Rent or Sale

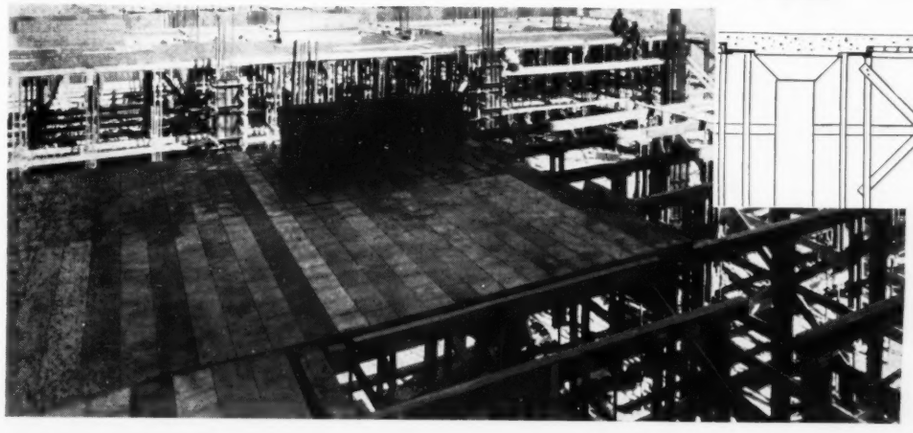
IRVINGTON FORM & TANK CORP.

WRITE DEPT. MC **IRVINGTON 46, N. Y.**

New York City Sales Office — Room 1106, 43 Cedar St.

Telephone: BOwling Green 9-4030





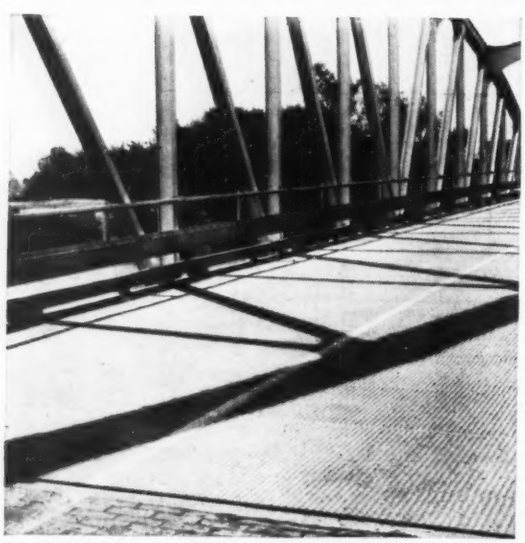
Note the ease of construction and continuous lines formed with 6" x the 8" wide units. SPEED Forms can be re-used indefinitely without repair.

ATLAS LABOR-SAVING *SPEED* FORMS

STEEL for Highway Bridges by BETHLEHEM

What are your needs in highway bridge-building? Whether it's to be an all-steel bridge, or reinforced concrete, or concrete-and-steel, you can count on Bethlehem supplying all the steel that the designs require.

Structural steel . . . reinforcing bars . . . reinforcing trusses . . . steel "Battledeck Floor" . . . single and multiple-strand bridge cable and suspender wire ropes . . . steel-sheet piling and steel H-piling . . . these and many other steel products for bridge-building are supplied through the nearest Bethlehem district office, or through Bethlehem Steel Company, Bethlehem, Pa.



STEEL SHEET PILING

There are many applications for Bethlehem Steel Sheet Piling in the construction of highway bridges. Use it in temporary cofferdams, in the construction of bridge foundations, and in abutments and retaining walls. This piling is rolled in a wide range of sections, including straight, arch and deep-web, and Z-type sections.

STEEL H-PILING

Steel H-Piles have high column strength. They are used to best advantage in locations where they can be driven into hard ground material such as hard-pan or shale or to firm bearing on solid rock. In such cases extremely high bearing capacities can be developed.

Bethlehem Steel H-Piles are special wide-flange structural steel shapes having web and flanges of the same thickness. They are used in bridge foundations in the same manner as other types of bearing piles.

"BATTLEDECK FLOOR"

Steel "Battledeck Floor" is as light as timber but more durable than concrete. Where traffic is heavy or the bridge span of considerable length, the weight of the flooring will naturally be an important factor in the cost of the steel structure required to carry it. In such cases "Battledeck Floor" should be given full consideration.

"Battledeck Floor" has an advantage over other steel floors designed for lightness in that it is not composed of thin sections. It consists of standard rolled beams, placed lengthwise of the traffic, with a flat plate of substantial thickness welded over these beams. It is therefore assured of a life as long as that of the bridge which supports it.

BETHLEHEM STEEL COMPANY, BETHLEHEM, PA.

On the Pacific Coast Bethlehem products are sold by Bethlehem Pacific Coast Steel Corporation

STEEL FOR HIGHWAYS

Road Joints — Reinforcing Bars — Bar Mats
Guard Rail — Guard Rail Posts and Fittings
Wire Rope — Hollow Drill Steel
Fabricated Structural Steel — Sheet and H-Piling
Spikes — Bolts and Nuts — Tie-Rods
Timber Bridge Hardware

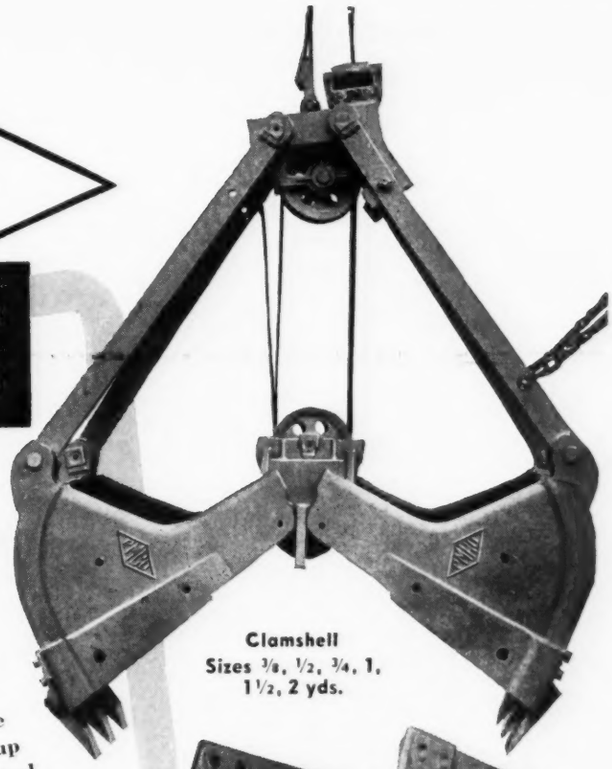
BETHLEHEM STEEL

PMCO

America's Most Complete Line of Material Handling Buckets

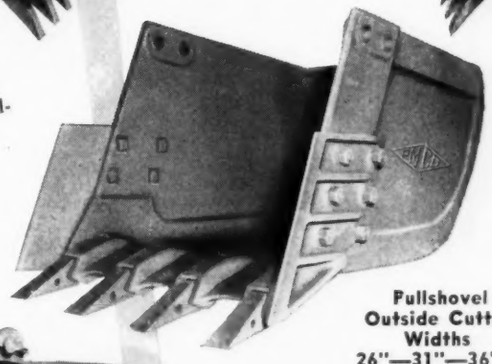
All purpose

- SHOVEL
- PULLSHOVEL
- DRAGLINE
- CLAMSHELL



Clamshell
Sizes 3/8, 1/2, 3/4, 1, 1 1/2, 2 yds.

• FRONTS, BOTTOMS, SCOOPS AND TEETH are 14% manganese steel developing tensile strength up to 120,000 p.s.i. This high percentage manganese steel gives tough, rugged strength for hard service and allows wide set corner teeth for easy entrance in digging. Volume production methods enable us to build a better bucket with amazing economies in manufacturing.



Pullshovel
Outside Cutter Widths
26"—31"—36"—39"

On the 1/2 yd. and 3/4 yd. shovel, Pullshovel Bucket and Dragline Buckets, all teeth are interchangeable — a great advantage to operators.

Experience Counts

See your shovel man or equipment dealer about PMCO Buckets and Dippers.

Dragline
All Purpose and perforated
Sizes 3/8 to 2 yds.
Stripping sizes 2 to 9 yds.

Shovel
Sizes 3/8 to 18 yds.

"Quality Since 1880"

PETTIBONE MULLIKEN CORP.

CHICAGO 51, U. S. A.

WE OPERATE THE LARGEST AND MOST COMPLETE MANGANESE STEEL FOUNDRY IN THE UNITED STATES.

This $500,000 picture needs $4,745 more . . . Do you see WHAT'S MISSING?

These floating derricks valued at $500,000 can't operate without the wire rope which is missing in the picture. It costs about $4,745 to equip the derricks with Preformed Wire Rope made of Improved Plow Steel. That's only $790 more than ordinary wire rope—and Preformed is far more economical.

When you buy any machine rigged with wire rope, make sure it comes equipped with Preformed. More and more manufacturers are standardizing on Preformed for their original equipment because it improves performance of their products. It's a money-saver because it lasts longer. It's easier and safer to handle.

Write for Free Copy of helpful book about Preformed. Address the Preformed Wire Rope Information Bureau, 520 N. Michigan Avenue, Chicago 11, Illinois.

Ask your own wire rope manufacturer or distributor

PREFORMED WIRE ROPE

LASTS LONGER
HANDLES EASIER

Here's the "Reason-Why"

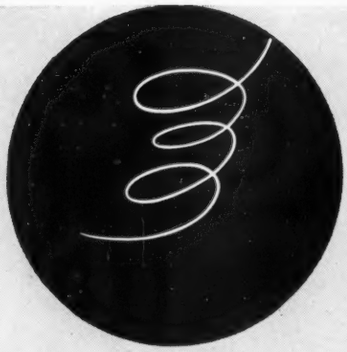
Compaction simply means that the minute soil particles have been moved by pressure, so closely together that they are bound in a dense mass. . . . But soil must first be pulverized (reduced as closely as possible to soil particle size) before it can be given maximum compaction, — for the water addition, which acts as a lubricant to permit the soil particles to move closely together, must form a film around each particle to perform this function most efficiently. . . . There's the vital reason why the SEAMAN MIXER, in conditioning soil for compaction, makes possible densities of 100%. The fine soil pulverization readily produced by the SEAMAN brings the moisture content to optimum more quickly and more positively, — and thus gives maximum efficiency to the water as a soil particle lubricant. . . . Even in compaction operations where no water was used, the SEAMAN, used to pulverize each lift prior to rolling, has repeatedly and consistently developed densities of 95%. . . . So, for all earth compaction work, whether for dams, levees, or fills, — get maximum density more quickly, — and more cheaply with the SEAMAN . . . It's as vital to soil compaction as the rolling equipment.

HAVE YOU YOUR 1947 COPY?

The ever-popular book "Soil Stabilization Methods", compiled by Seaman engineers is yours on request. Just ask for Bulletin C-25.

The **SEAMAN MIXER**

SEAMAN MOTORS, INC.
MILWAUKEE 3, WISCONSIN



If anybody ever wants to bet that you can't carry water in a sieve, take the wager and get in touch with us here at Cumberland Cement. • We have a screen so fine it'll hold water like a teacup—a sieve with more than 40,000 openings per square inch. Not even a gnat's eyelash could penetrate those tiny openings, but Cumberland Cement goes through with ease.

"not even a gnat's eyelash"

• Yes, after its final grinding Cumberland Cement is so completely pulverized that it leaves only a small percentage of residue on that watertight screen. That's how far we go to make sure we'll never lose our reputation for quality.

Cumberland

PORTLAND CEMENT COMPANY

Chattanooga Bank Building • • Chattanooga 2, Tenn.

Cumberland Cements

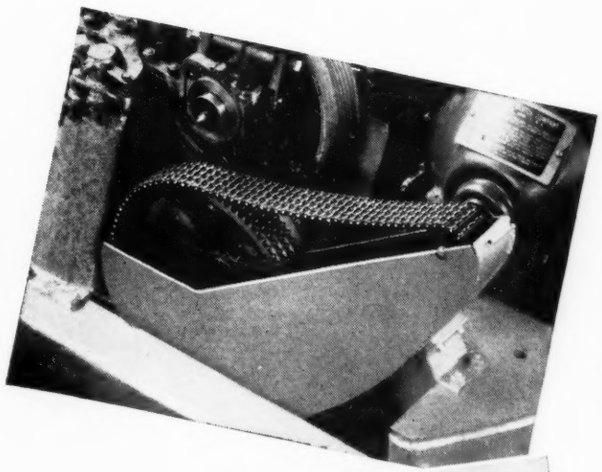
PORTLAND • HIGH EARLY STRENGTH • AIR ENTRAINING • MASONRY

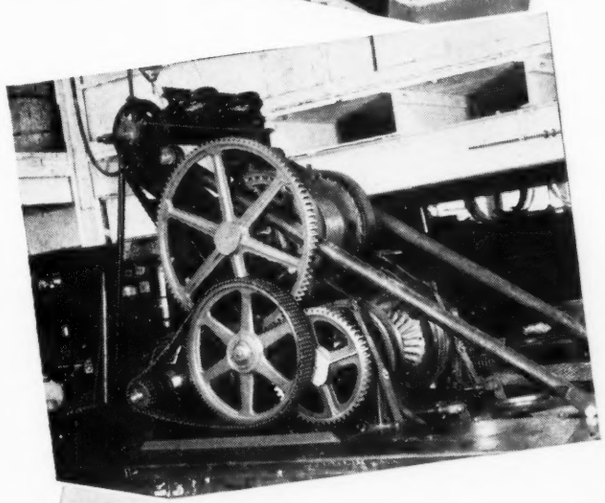
To Eliminate Trouble and Noise

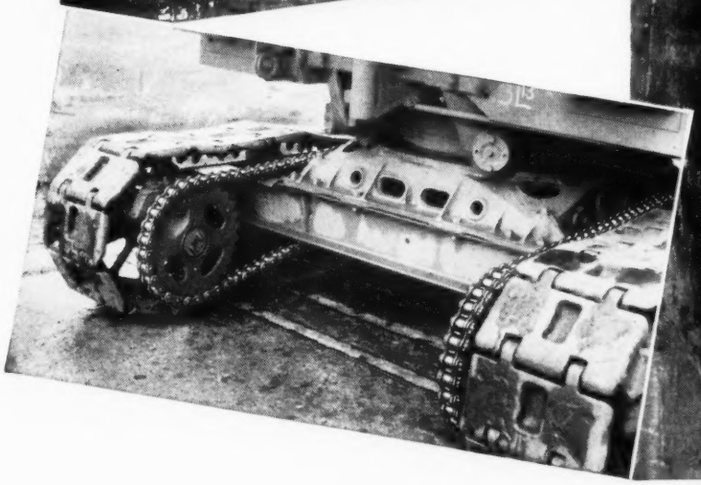
Excerpt from letter from construction contractor:

"We wish to change from a gear train drive to a chain drive on our . . . . . Dragline to eliminate the trouble we are presently having. The gears are: one engine pinion, intermediate and driven gears.

"We have used your multiple strand chain drives on other makes of machines and like the performance and trouble-free operation, as well as the elimination of noise."





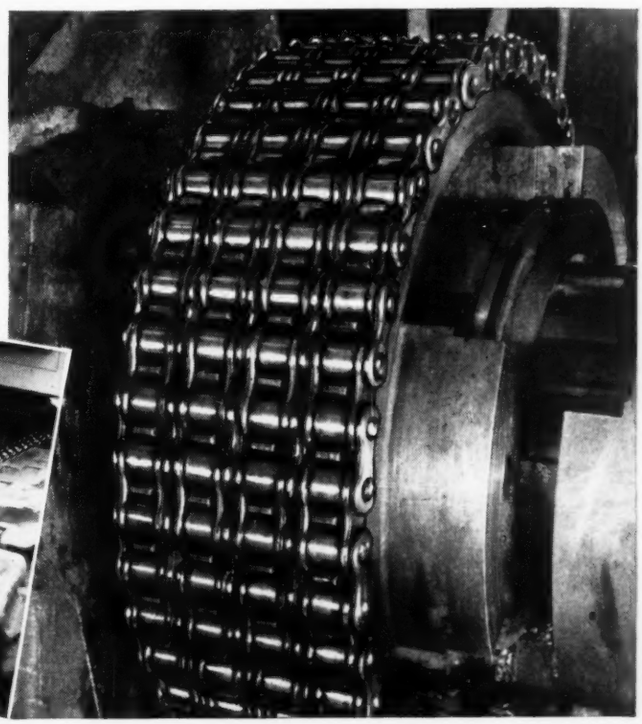


Construction, Engineering and Contracting Firms— Invariably Prefer

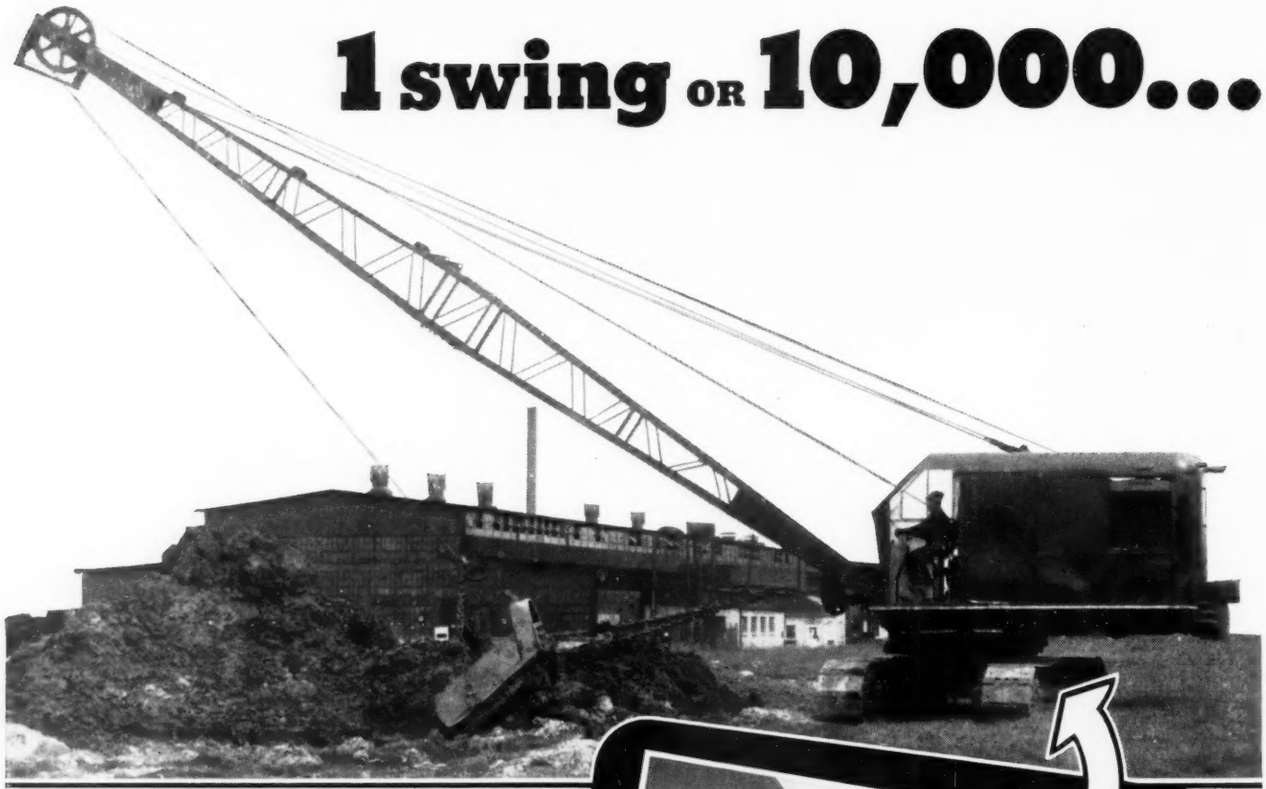
DIAMOND ROLLER CHAINS

Great Strength, Compact, Quiet, No Slip.
Found on the Leading Makes of
Construction Machinery and Equipment.

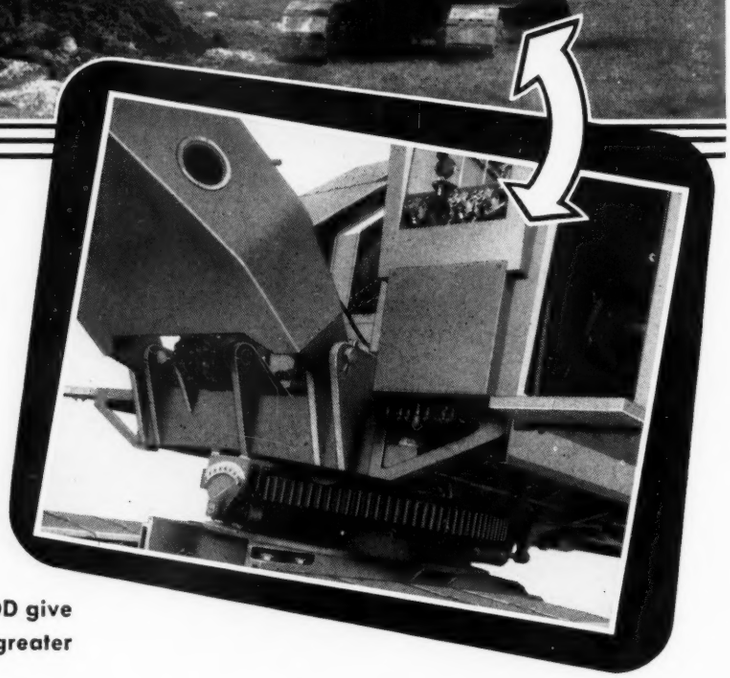
DIAMOND CHAIN COMPANY, Inc.
Dept. 418, 402 Kentucky Ave., Indianapolis 7, Ind.
Offices and Distributors in All Principal Cities



1 swing OR 10,000...



Heavy Loads or Light ..the Upper Body of an OSGOOD Stays Stable and in Alignment



No detail is overlooked to make an OSGOOD give you more work for longer periods, with greater efficiency and at lower cost.

For example, every turn of the upper body, regardless of load, is smooth and stabilized. In addition to the conical rollers which travel on the rotating gear, *every large* OSGOOD is equipped with hook rollers which roll *under* the rotating gear. These hook rollers, adjustable to compensate for wear, help distribute stresses evenly, keep the upper body firm and in alignment at all times.

This is only one example of the "perfection in detail" which makes OSGOOD Power Shovels, with famous Air Control, leaders for performance in their field.

POWER SHOVELS • CRANES • DRAGLINES • CLAMSHELLS • BACKHOES • PILE DRIVERS

THE OSGOOD CO. O-G THE GENERAL CO.
EXCAVATOR

MARION OHIO

DIESEL, GASOLINE OR ELECTRIC POWERED • ⅜ TO 2½ CU. YD. • CRAWLERS & MOBILCRANES

TWO YEARS OF USE PROVE SUPREMACY!

ATLAS ROCKMASTER

The original milli-second delay blasting system

Gives 4 Outstanding Results

All over the country blasters are recommending Rockmaster for new blasting efficiency. They claim that it yields more rock ready for the shovel, increases fragmentation, reduces "back break," eliminates complaints about noise and vibration even when more holes are fired. They ought to know what Rockmaster will do. *They've been using it* since 1945!

In quarries, strip pits, on construction work, even underground in many cases, Rockmaster has increased production by as much as 30 percent!

Part of the Rockmaster system is a split-second delay that enables you to time the delay elements of your shots within thousandths of a second—a degree of control heretofore impossible. In 1946 alone, over 2,000,000 blasting detonators which control this delay have been sold!

Yes, time has proved that Rockmaster *gives results*—the kind of results that really count. But be sure you get the genuine, original Rockmaster. Talk over your problems with the Atlas representative. He's had two years of experience in split-second delay blasting, giving a background of know-how that cannot be gained in any other way.

1. **MORE ROCK READY FOR SHOVEL**
2. **BETTER FRAGMENTATION** Less secondary blasting. Shovel efficiency increased as much as 30%.
3. **FAR LESS "BACK BREAK"** behind your shots.
4. **MINIMUM NOISE AND VIBRATION** even though more holes are fired.

Less Bark

More Bite

"ROCKMASTER"—Trade Mark

ATLAS EXPLOSIVES

"Everything for Blasting"

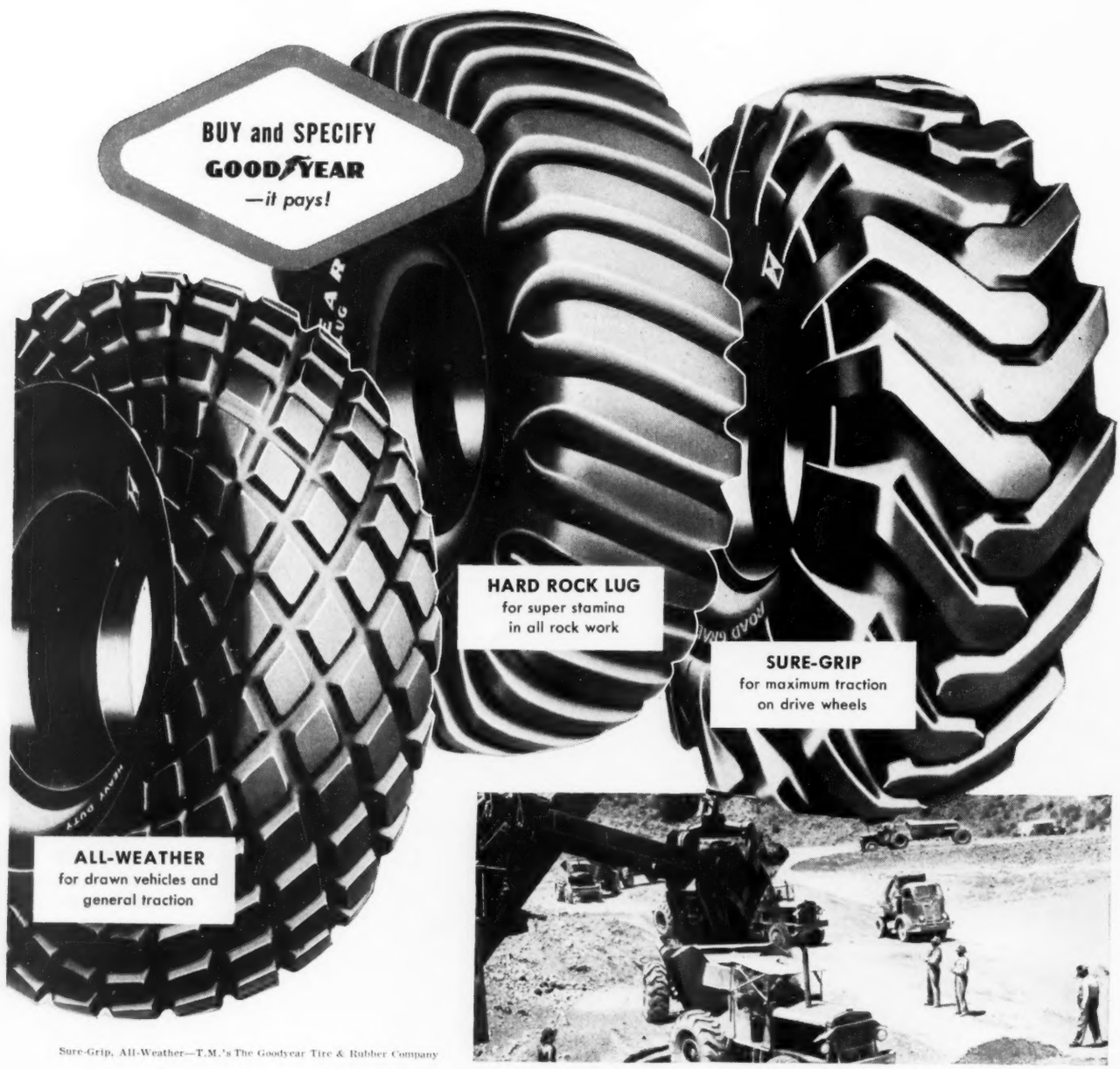
CHEMICALS ATLAS EXPLOSIVES

ATLAS POWDER COMPANY, Wilmington 99, Del. • *Offices in principal cities* • *Cable Address—Atpowco*

REASON:
RESULT:

In body and tread, job-proved Goodyears are built to do more work—take more punishment —move more dirt, faster, at lower cost—than any other off-the-road tires built today.

More yards are moved on Goodyear off-the-road tires than on any other kind.

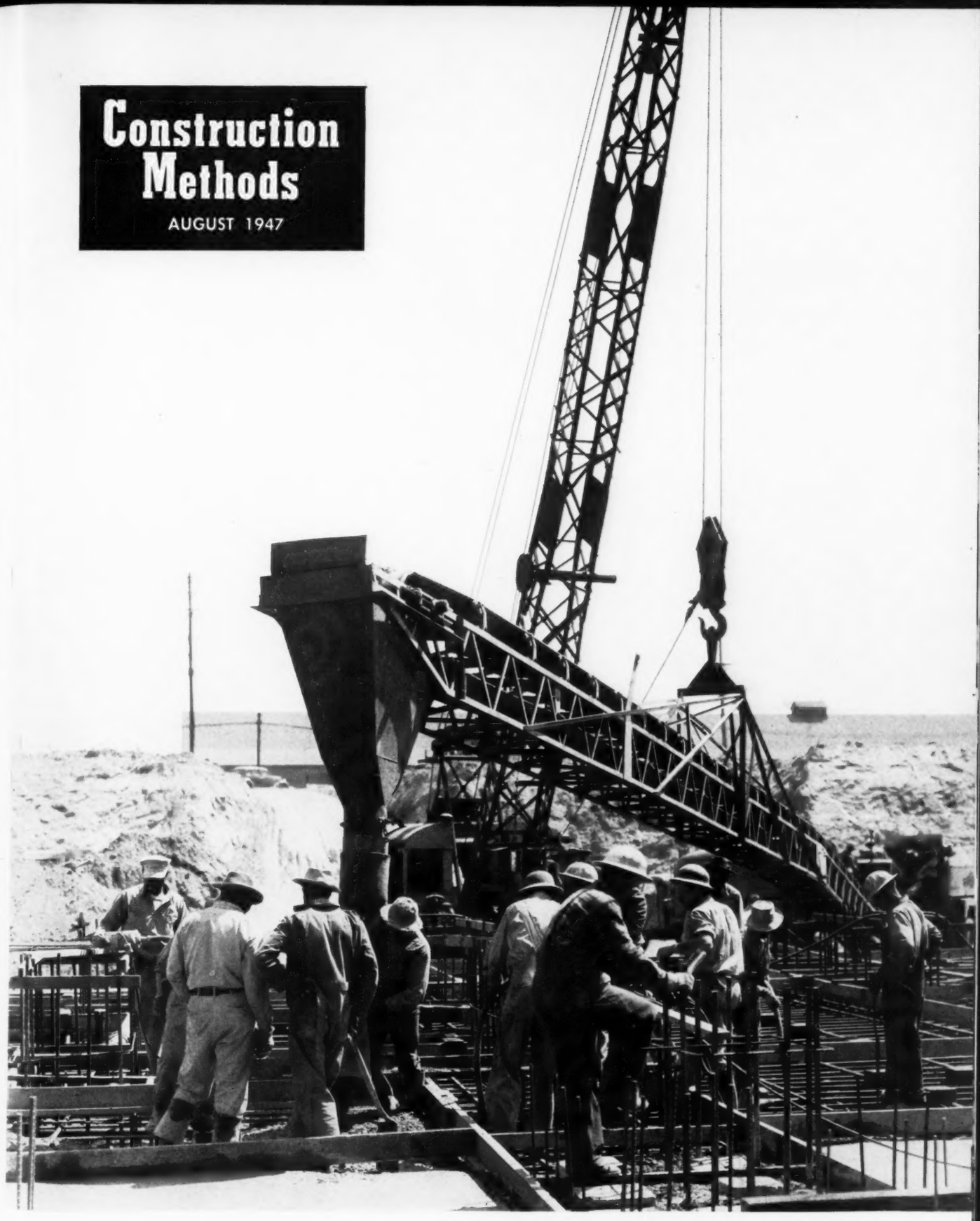


Sure-Grip, All-Weather—T.M.'s The Goodyear Tire & Rubber Company

GOODYEAR

Construction Methods

AUGUST 1947

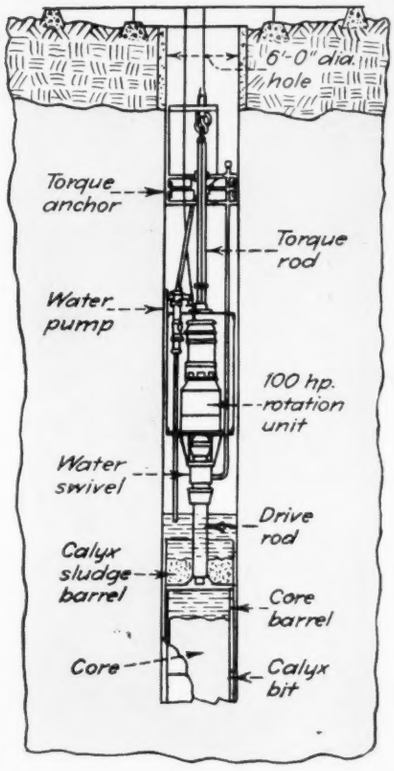


Concrete Right Where You Want It

NO BUGGIES, no barrows, no shoveling, but concrete is still placed exactly where wanted by this 100-ft. crane-supported Barber-Greene belt conveyor. Guy F. Atkinson Co., contractor for the new Los Angeles municipal Harbor Steam Power Plant, rigged up this device to speed up placing 18,000 cu. yd. of concrete in the plant's substructure. Concrete is placed just as fast as transit-mix trucks can maneuver into position and unload. Crane hitch to conveyor is outward from center so receiving end is held down by gravity. Wm. R. Bushelle, Atkinson's superintendent on the job, is responsible for the idea and designed the conveyor suspension system. Al Nemitz, building superintendent and L. Cenotto, concrete foreman, helped him. Brown-Bevis, Los Angeles, built the rig.

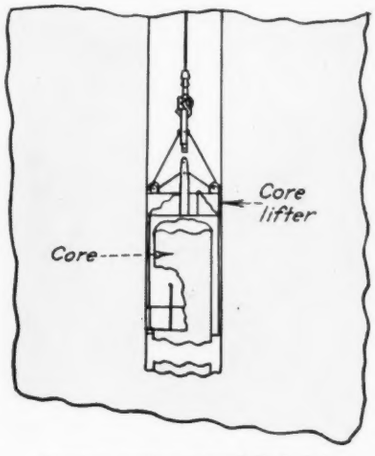
Above ground . . .

Calyx drill assembly for sinking 6-ft. drop shafts 1,435 ft. deep at Canon del Pato hydro plant in Peru hangs from high steel operating tower. From top down, assembly includes expander torque anchor, 100-hp. driving motor, and 6-ft. Calyx drill 18 ft. high, top 3 ft. of which is sludge storage barrel. Core puller is hanging at right of drill barrel. Bucket is bailing out hole preparatory to start of new drill run. Tower is mounted on rails for moving to new locations for drilling remaining four holes.



Below ground . . .

Drill assembly in working position in hole is shown by top diagram. Torque anchor is expanded against sides of bore to resist turning moment of driving motor. Sludge from cutting edge collects in barrel above cutter unit. Bottom diagram shows lifter extracting core after it has been broken loose by light powder charge.



(Drawings courtesy Ingersoll-Rand Co.)

Big Calyx

SINKING FIVE 6-FT. HOLES 1,435 ft. through solid granite with the world's biggest Calyx drill is the high spot in building the Canon del Pato hydro-electric project on Rio Santa in the Peruvian Andes under most difficult mountain conditions. The holes are to be drop shafts or penstocks from the end of a 5½ mi. water tunnel to each of five 25,000-kw. generating units in an underground powerhouse.

Other features of the project include the 18½-ft. hydro tunnel 5½ mi. long with a forebay sand trap, a 72-ft. stone-faced Cyclopean masonry dam with a vertical downstream face, a diversion tunnel with an 80-ton concrete clo-

This does the drilling . . .

Size of the big Calyx drill is strikingly shown by man standing inside of cutting edge. Serrated edge of big barrel, made up of 2-in. plate, cuts through solid granite with aid of shot. At right is lower end of rotating drive unit.

This does the extracting . . .

Fingers inside big drum, actuated by pull on chain, grip core broken loose by explosive charge for removal from hole.

OLD SEABEE TRICK. Empty oil drums welded together as pipeline serve as flume to carry cofferdam seepage high above workmen excavating dam foundation through debris-laden canyon floor.

DIVERSION TUNNEL, 750 ft. long, carrying river around dam, will be closed by 80-ton concrete gate hanging by cables. Closure will be made simply by cutting cables and dropping gate into place.

. . . McGraw-Hill World News . . .

Drill Sinks 1,400-Ft. Holes

sure gate, and a double-deck railroad bridge that will carry the transformer yard on its lower deck. The bridge leads into an access tunnel 1,900 ft. long through which equipment will be transported to the underground powerhouse.

The drop shafts are being sunk from the surface directly over the power house and intercepting the end of the hydro tunnel. Holes are bored with an Ingersoll-Rand 6-ft. rodless Calyx rig in which the rotation unit follows the barrel cutter down the hole. Torque is resisted by a torque anchor which is expanded against sidewalls of the bore hole just above the rotation unit. The serrated cutting edge of the core barrel engages shot at the bottom of the slot or kerf as a cutting medium, and the whole barrel operates in water that carries the cuttings upward as sludge to storage barrel above the cutting unit. A pump lowered with the drill rig keeps the water at proper

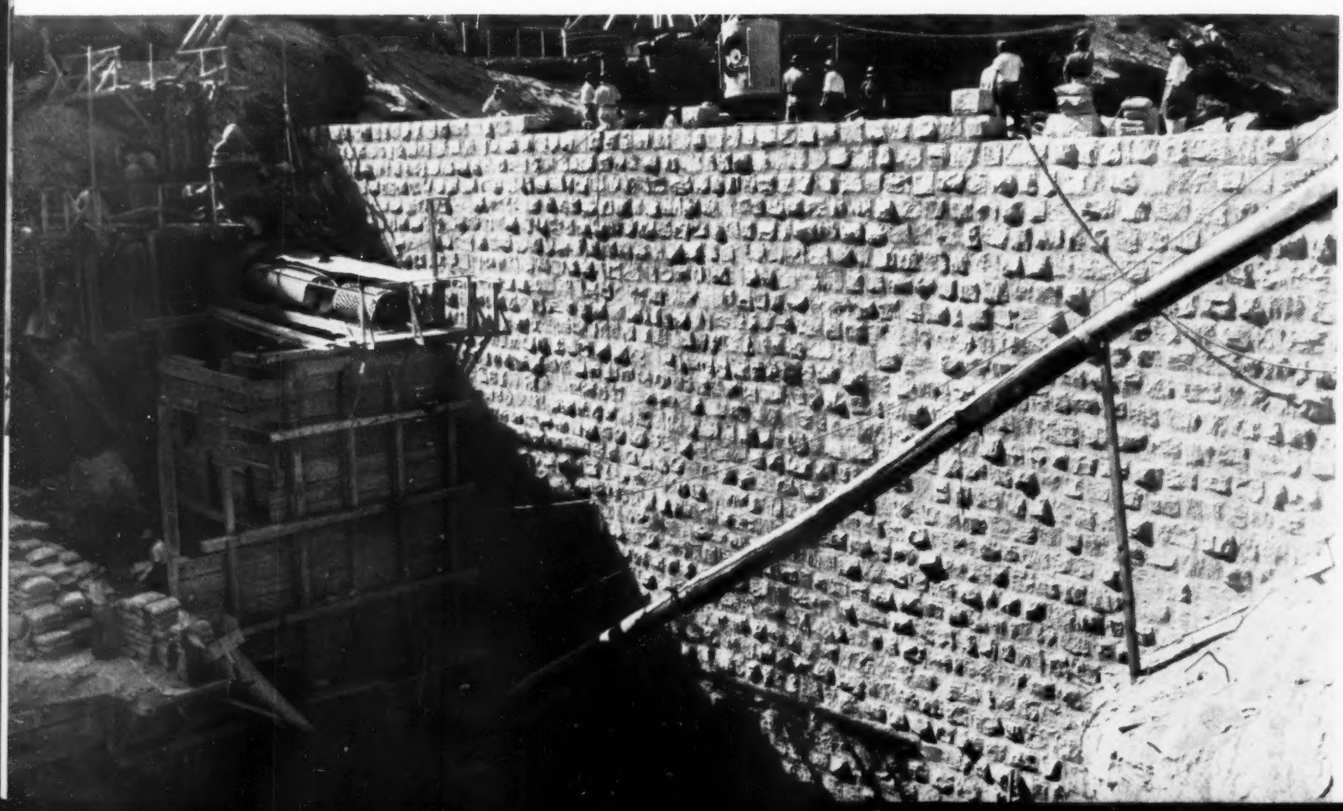
NOT MUCH ROOM for equipment here, at bottom of canyon at dam site. Two guy derricks handle stone and concrete for rock-faced Cyclopean masonry dam. Crushing and screening plant is in temporary location.

level. A 100-hp. electric motor drives the drill.

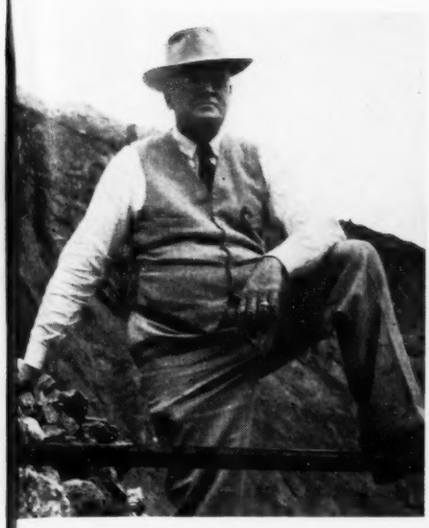
After a core has been cut full length of barrel, the drilling unit is pulled out of the hole and the water is pumped out. Then a workman enters the shaft and plants an explosive charge in the kerf at top of core. When this charge is fired the core breaks off at the bottom, and is then removed with a special extractor designed as collapsible steel fingers that grip the sides of the core.

All of the drilling and extracting equipment is handled from a high steel derrick fitted with three hoists. The main hoist for the drill will lift a 28-ton load with its 1¾-in. cable. The assembly of drill barrel, rotating drive and torque anchor is parked on a flat car and rolled out of the way while the core is being extracted. Drilling, at the present rate of 10 ft. per day, will take about two years for the five shafts.

Other interesting construction features of the Canon del Pato project are shown in accompanying illustrations. Development of the Rio Santa at this canyon site was first planned by Dr. Santiago

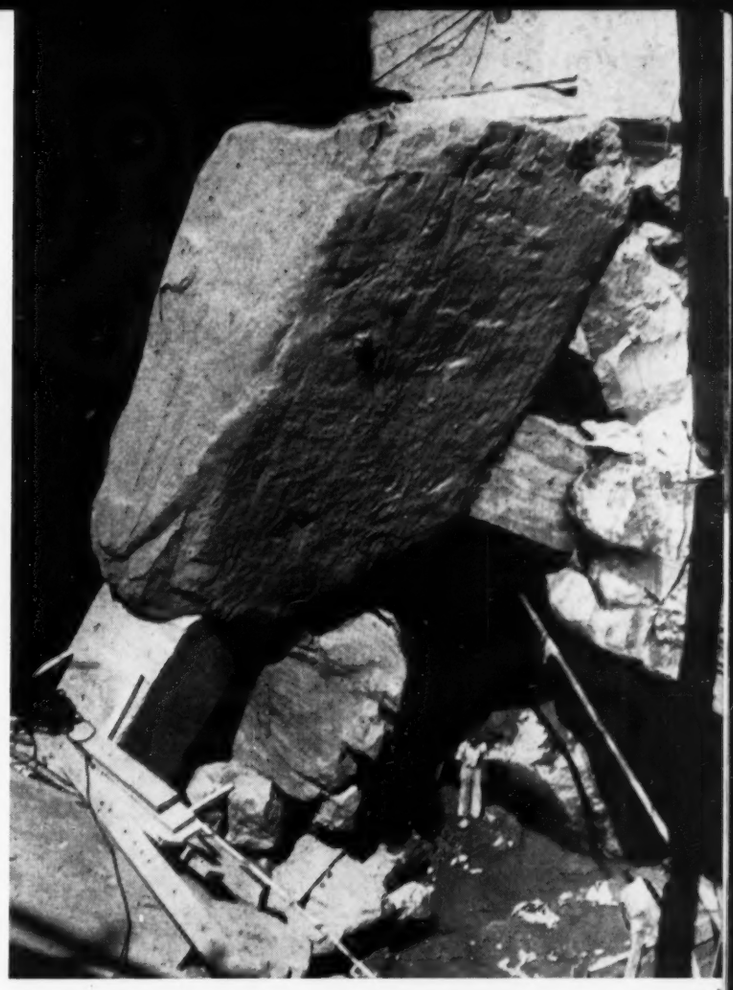


VERTICAL DOWNSTREAM FACE of dam (below) is designed to pass boulders over crest, as reservoir will fill up with debris in 3 weeks. Crushing and screening plant are in permanent location, hanging on canyon wall above mixer. Derricks (base of one just beyond concrete bucket) have been raised to new positions to top out structure.



RESPONSIBLE for Peru's Canon del Pato hydro project are (left) BARTON M. JONES, former TVA planning engineer, in charge of construction, and DR. SANTIAGO ANTUNEZ DE MAYOLA, Peruvian engineer, who conceived the development and eventually convinced his government of its feasibility.

Antunez de Mayola in 1913. Since that date he has devoted much of his time to convincing the Peruvian government as to the merits of the project. Due to his efforts the Corporation Peruana del Santa, a governmental agency, has been established to develop the project, officially known as Central Hidroelectrica del Canon del Pato. Barton M. Jones, former planning engineer for TVA, is in charge of all construction operations.



IF YOU CAN'T LICK 'EM, JOIN 'EM, is idea here. Huge boulder encountered in dam foundation excavation is propped up and braced with concrete struts. It will be incorporated into Cyclopean masonry of structure.

DOUBLE-ARCH STONE BRIDGE at outlet end of power tunnel was designed to eliminate falsework in river span, except for arch closure as shown here, because of swift water. Facing stone and concrete are handled by cableway. Two-deck bridge will carry transformers on lower deck and railroad, leading to access tunnel to underground powerhouse, on upper level.

NIAGARA OF HARDPAN flows from belt of Euclid loader on 2,000-ft. runway extension job at Boston airport. Pulled by Caterpillar D8, rig heaps 14-yd. bottom-dumps in less than ¾ min.

HUURY-UP JOB of moving 1¼ million yd. of fill at Boston's Logan Airport is directed by J. J. WALDMAN, resident engineer for Massachusetts Department of Public Works, and PROCTOR COOKE, superintendent for Savin Construction Corp.

Loader and Shovel Lick Ha

DESPITE HARD DIGGING and a long haul on their fill contract for an expansion of Logan International Airport in East Boston, Mass., The Savin Construction Corp., East Hartford, Conn., is moving an average 10,000 bank yd. of hardpan per 16-hr. day with one Euclid loader, a 2½-yd. Northwest shovel, and a fleet of 18 Euclid bottom-dump wagons.

To get 1¼ million yd. of basic fill needed to extend one runway 2,000 ft. into the bay around the airport, Savin is leveling Governors Island, a mound of glacial till or hardpan at the south edge of the field. Shovel and loader dig the tough material, which is hauled 1½ mi. across the airport and dumped at the top of the fill slope where it is bulldozed into the water.

In addition to the fill at 49c. per cu. yd., Savin's $600,000 contract includes clamshell excavation of 37,000 yd. of silt and mud ahead of the fill and the demolition of 15 ammunition storage igloos with concrete and granite walls 5 ft. thick that were built on Governors Island during the Civil War.

For the Massachusetts Depart-

ROOTER LOOSENS MATERIAL (below) to depth of 18 in. at borrow site to prepare hardpan for loader. LeTourneau K30 with single tooth is pulled by D8. Adams 512 grader maintains haul roads and cleans up spillage from heaped wagons.

LOADER TAKES CUT 14 to 20 in. deep and 2 ft. wide in rooted hardpan. Level loading run of 2,800 ft. is ideal for Euclid machine, but hardpan makes tough digging.

AROUND PIT RIM where loader operation is not practical, Northwest 2½-yd. 80D shovel fills Euclid wagons. Loader and shovel together average 625 yd. per hr. in hardpan.

Hardpan on Boston Airport

ment of Public Works, which is handling the airport expansion, William H. Buracker is commissioner, Philip H. Kitfield is chief engineer, and J. J. Waldman is resident. Proctor Cooke is superintendent for Savin.

BOTTOM-DUMP WAGONS on average 1½-mi. haul carry hardpan fill to runway extension. Two D8 bulldozers with LeTourneau blades spread material at dump.

Roller-Vibrator Improves Precast Pipe

McGraw-Hill World News

BY MOUNTING a vibrating roller within a centrifugal precasting mold, Rocla, Ltd., Melbourne, Australia, produces reinforced concrete pressure pipe with reduced weight and thinner walls but higher strength, and with flow characteristics comparable to steel-lined pipe. Spirally-reinforced unlined pipes tested to 100 psi., and with internal diameters of 15 and 18 in. are precast with wall thickness of only 1½ and 2 in., respectively.

For manufacturing 12- to 72-in. dia. pipe, resistance welded, longitudinally strengthened spiral wire reinforcing is inserted in a rotary casting mold, and a spring-mounted steel roller is placed inside. As the concrete (a 1:4½ mix with 8 percent water by weight) spins by, the roller compacts, vibrates and screeds it to form a dense, impermeable, smooth-walled pipe shell.

LARGE STEEL ROD (below) extending through centrifugal form is held against pipe wall by springs to act as rolling pin which vibrates, compresses and screeds concrete. Roller is mounted on movable arms to adjust for various pipe diameters and shell thicknesses.

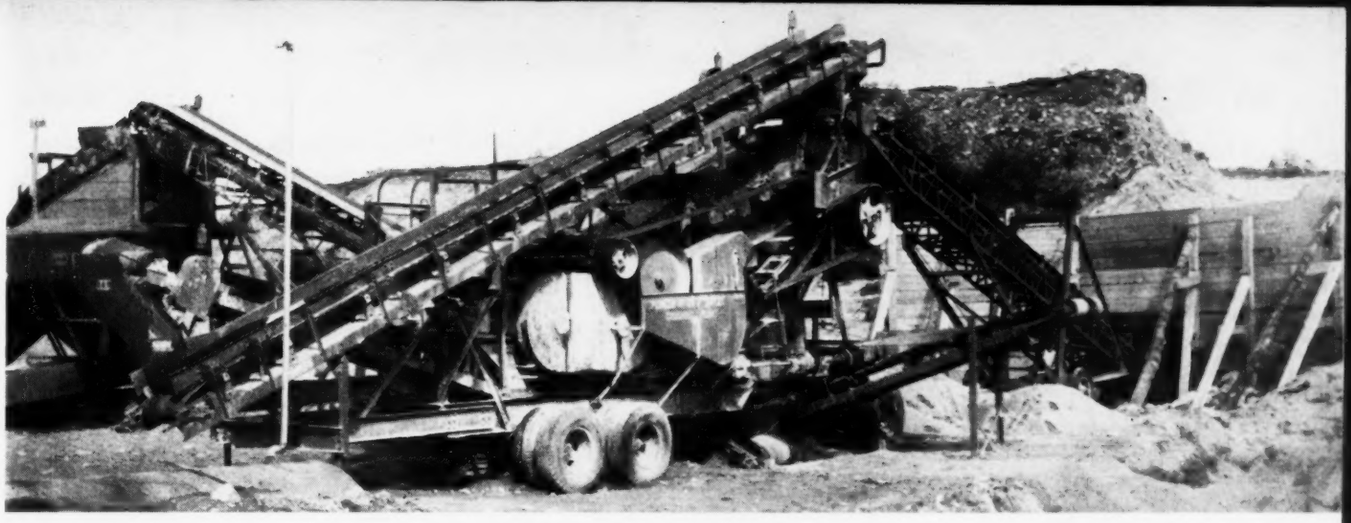
ASPHALTIC CONCRETE PAVEMENT for Maine Turnpike is placed in hurry by two Barber-Greene finishers operating in parallel on one 24-ft. roadway of divided highway. Job is being pushed to complete 44-mi., 1,360,000-sq. yd. paving project before winter.

Maine Turnpike Asphalt Paving H

PLEASED WITH FINE PAVING are those responsible: W. B. GETCHELL, JR., Maine Turnpike Authority's executive director, J. W. DUNTON, his administrative assistant; L. D. BROWN, project engineer for Turnpike consultants, Howard, Needles, Tammen & Bergendoff; L. M. STEWART, president of Stewart Associates, Inc., paving consultants; LOUIS CAPONE and RALPH KNOX, project manager and superintendent, respectively, for B. Perini & Sons, Inc., contractors.

THE BIGGEST HIGHWAY PAVING JOB in the country—1,360,000 sq. yd. of asphaltic concrete pavement for the dual roadways of the 44-mi. Maine Turnpike—is being rushed to completion so that this fine, modern toll highway may be opened to traffic by November 1. Contractor for the entire $5,600,000 paving project is B. Perini & Sons, Inc., Framingham, Mass., who sublet the pavement on the north half to Gibbons & Reed Co.,

BASE COURSE AGGREGATE is 2-in.-minus gravel produced for south half by Cedarapids crushing units in pit adjacent to asphalt plant. At left are bar grizzly and truck discharge ramp, finished aggregate loading bins; at right are 10x36-in. jaw crusher and 40x24-in. roll crusher. Lorain 2-yd. shovel digs gravel; Euclid rear-dumps deliver aggregate to asphalt plant stockpile.



GLACIAL GRAVEL for base course paving comes from esker ridges. On north half of project, material is processed by Pioneer crusher shown here, or by Cedarapids outfit, each set up adjacent to bituminous mixing plants.

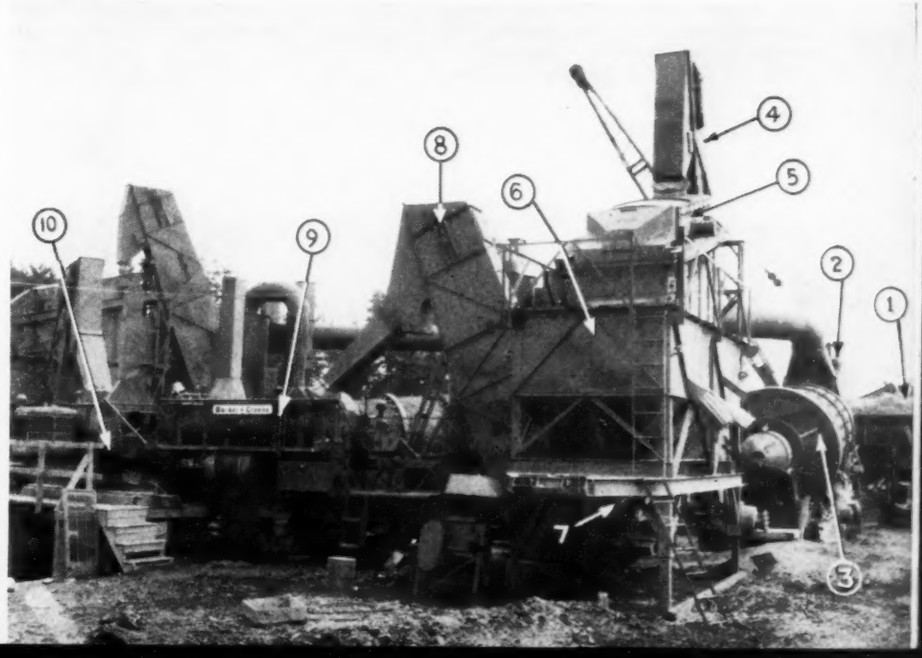
TWIN, CONTINUOUS ASPHALT PLANTS produce base mix for south half of Turnpike and each turns out 1,000 tons of bituminous concrete per day. Hauling truck loads in pit beneath gob hopper which takes output of both plants. Note water kept in pit to cool truck tires and to prevent sticking of spilled mix.

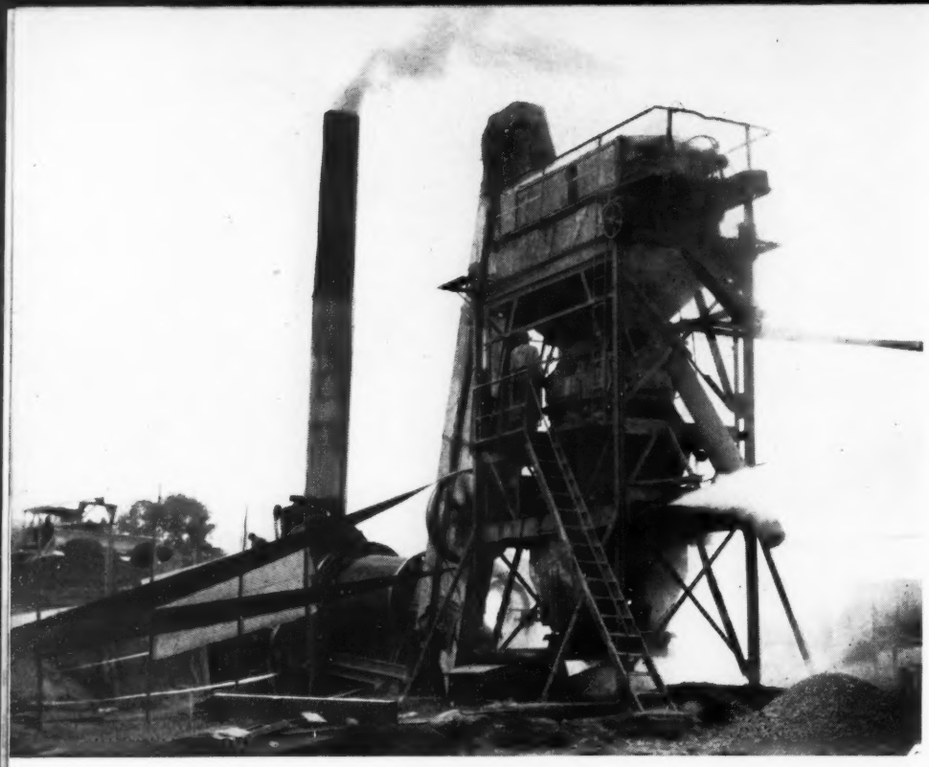
Hits Fast Pace

Salt Lake City, Utah. The contractors produce their own stone, gravel and sand aggregate for the highway's 644,000 tons of bituminous concrete, which they mix in four asphalt plants set up along the project. Excellent planning, personnel and equipment at all stages of the work, from pits to finished pavement, makes the job go smoothly and fast.

The Turnpike, running from Portland to Kittery on the New Hampshire boundary, will have two 24-ft. paved roadways flanked by 4- and 8-ft. surface treated shoulders and separated by an 18-ft. median strip. Paving is a 7- to 8-in. thickness of hot mix, hot-laid, dense-graded asphaltic concrete placed in three layers on the prepared subgrade, all a non-frost-heaving A-3 type. Black base, put down in two 2½-in. layers on gravel subgrade, or two 3-in. layers on sand, is prepared of sand and gravel aggregate, and is topped with a 2-in. surfacing made with crushed rock and sand. All bitumen is 85-100 penetration oil asphalt trucked from Everett, Mass.,

STEADY STREAM OF MATERIAL flows through continuous mixing plant (below). Units are: (1) Two-compartment charging bin with reciprocating discharge where aggregate gets rough proportioning for primary temperature and grading control; (2) cold elevator; (3) oil-fired drum drier with dust collector; (4) hot elevator to gradation control unit; (5) 3½-deck sizing screens; (6) four-compartment storage bin; (7) dual apron feed from gradation control unit; (8) hot elevator; (9) twin-pugmill unit where metered bitumen is added and materials mixed; (10) discharge to gob box.





4,000-LB. BATCH PLANT on north section is belt-driven by Caterpillar diesel. Madsen plant, like 3,000-lb. Standard plant on same section, is fed stockpiled aggregate by bulldozing material to bulkheaded hopper above Jeffery vibrating feeder which passes aggregate to cold elevator. Cleaver-Brooks generators supply steam to plants.

ROLLING RIGHT ALONG, pair of tamping finishers puts down dense-graded asphaltic concrete pavement and is closely followed by unballasted Buffalo-Springfield 3-axle tandem roller. Fleet of 8-ton trucks, weighed in and out of plant on Howe automatic platform scales and with oiled and tarpaulin-covered bodies, delivers mix to pavers.

and stored in feed tanks totaling 164,000 gal. at the four mixing plants.

To make the high-type pavement (Table I) for the south section of the project, Perini set up two asphalt plant and crusher outfits—one for base mix, the other for topping. Two continuous-mix type Barber-Greene bituminous plants along with a Cedarapids portable 200-ton crusher, constitute the base plant setup. The twin Barber-Greenes really pour out the mix—their combined output exceeding 200 tons per hr. The plants, details of which are shown in an accompanying photograph, are mounted alongside each other so that one ½-yd. Northwest clamshell feeds stockpiled aggregate to both units, which in turn discharge finished mix into a common gob box.

From the plant, asphaltic concrete is trucked to two Barber-Greene paving-finishing machines, operating in parallel, that spread, level and tamp the base courses. The mix is spread at between 250 and 275 deg. in 3- or 3½-in. layers for compaction to the required 2½- or 3-in. thickness. The pavers put down the first lift of base in two 12-ft. widths, and the second in widths of 11 and 13 ft. to stagger the centerline joint. The machines operate at about 10 ft. per min. and are followed by a 3-axle, 12-ton tandem Buffalo-Springfield roller that gives the pavement an initial one-pass compaction. After the surface has cooled to hand temperature, another similar roller consolidates it to the specified 95 percent of

CRUSHED ROCK for 143,000 tons of surface course paving on project is processed in Cedarapids aggregate plant at quarry. More than 100,000 tons of rock is run through crusher units and trucked in Autocar diesels to adjacent asphalt plant on south section and to plants 20 mi. away on north section of Turnpike.

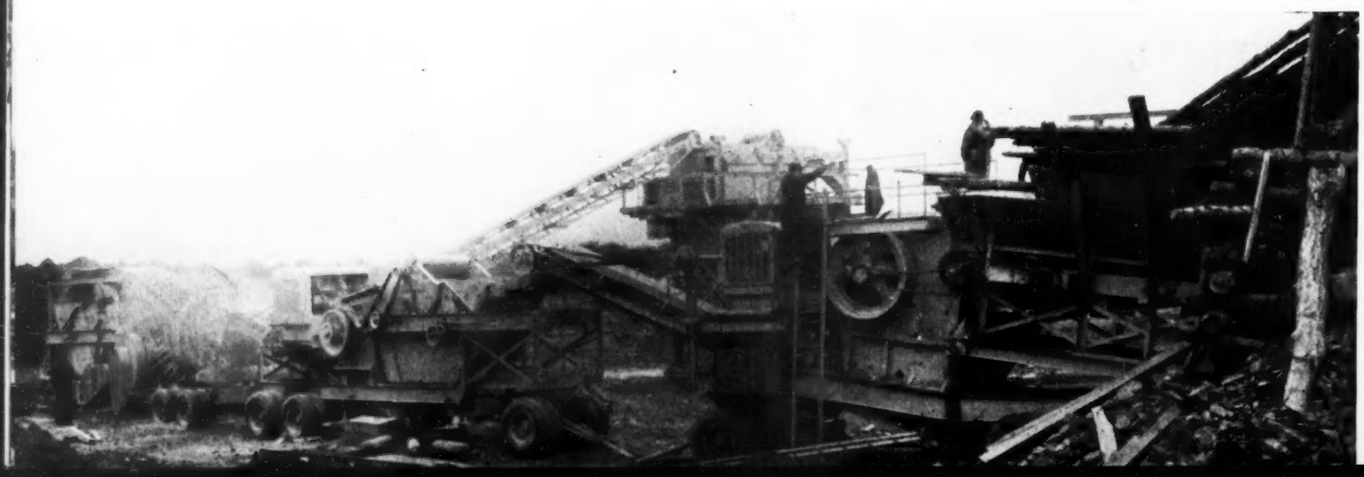


TABLE I—Aggregate Grading
Percent by Weight

COMPOSITE ANALYSIS				JOB FORMULA		
Passing Sieve	Retained on Sieve	Base Courses	Top Course	Size (in.)	Base Courses	Top Course
2″	1″	15.0		—¼	40	
1″	¾″	——	3.5	¼ to ½	15	
1″	½″	29.8	——	½ to ⅞	26	
¾″	⅜″	——	29.0	⅞ to 1½	19	
½″	No. 4	15.9	——	—⅛		45
⅜″	No. 4	——	16.0	⅛ to ⅜		15
No. 4	No. 10	8.9	12.3	⅜ to ¾		40
No. 10	No. 40	16.2	14.2	TOTAL MIX		
No. 40	No. 80	6.8	10.3			
No. 80	No. 200	4.4	9.6	Aggregate	95.3	94.0
No. 200	——	3.0	5.1	Asphalt	4.7	6.0

HARD AGGREGATES carefully graded make excellent asphaltic concrete. Fine aggregate is sand. Coarse aggregate for black base is crushed gravel with wear of 29 percent; for 2-in. surface course it is blended crushed granite, wear 14 to 17 percent. All asphaltic cement is 85-100 penetration oil asphalt.

TOP COURSE PLANT on south section produces 1,000 tons per day. Lorain Motocrane with 1-yd. clamshell feeds stockpiled aggregate to 4,000-lb. Cedarapids mixing plant which is supplied with steam by Standard boiler.

laboratory density by rolling and cross-rolling until all roller marks are removed.

Generally, Perini paves a day or two on first base course, then switches his machines to place the second lift of base. Since the pavement dries faster than the subgrade, he likes to keep a stretch of first course down, ready for the second, to work on after rains. The entire integrated operation of manufacturing and paving is so well planned and smoothly executed that more than 2,100 tons of asphaltic concrete, covering 17,500 sq. yd. to a depth of 2½ in., has been placed in a single day.

The wearing course for the southern section of the Turnpike is produced in a Cedarapids 4,000-lb. batch plant about 2½ mi. south of the base plant. Aggregate for the mix is quarried adjacent to the plant, run through Cedarapids crusher units and trucked to stockpiles at the mixing plant. Quantity and quality of this aggregate is so high that Gibbons & Reed on the north section are also using it for their top mix.

In the quarry, blast holes are put down by Ingersoll-Rand wagon drills supplied by a 750-cfm. Sullivan compressor, and ledge is blasted with American Cyanamid 40- or 60-percent dynamite. Rock is loaded by a Northwest 1½-yd. shovel into Euclid rear-dump trucks for a short haul to the crusher. Fragments larger than ¼-yd. are scalped out, and the remainder

WEARING COURSE 2-in. thick is spread by single Barber-Greene, alternately paving two 12-ft. lanes. Base courses beneath are put down in two 12-ft. widths for first lift and 11- and 13-ft. widths for second lift to eliminate center joint through pavement.

BOTH CONTRACTORS AGREE on paving equipment. Both use Barber-Greene finishers (below) and Buffalo-Springfield 3-axle tandems, but Perini's rollers are equipped with oil pads while Gibbons & Reed's have water sprays to prevent mix from sticking to wheels.

is put through a 25x40-in. primary and 10x36-in. secondary jaw crusher, a 40x24-in. roll crusher, and sizing screens to produce graded stone in two sizes: ¾-in.-minus to ¼-in., and ¼-in.-minus to dust.

At the asphalt plant, sand and crushed stone aggregate is loaded into a 3-compartment primary batcher. Gates at the base of this unit regulate flow of the three materials to an apron feeder and cold elevator which discharges into the drier. From the drier, heated aggregates are raised by elevator to vibrating screens atop a 4-compartment bin from which they are drawn, weighed on dial scales, dumped into the pugmill, mixed with asphalt, and discharged into trucks.

The 2-in. wearing course is spread by one Barber-Greene finisher paving a 12-ft. width. The top course is placed as soon as practicable after base paving so that hauling trucks may ride the finished roadway rther than the shoulders or median strip to which they are restricted until the pavement is completed.

On the north section of the project, Gibbons & Reed follow procedures similar to Perini's — the main difference being that their two plants each produce either base or top mix as paving progress requires. The plants are set up near the Turnpike, one north and one south of the Saco River, at about the midpoint of their work. The Turnpike bridge over the Saco is as yet uncompleted, and it was to avoid lengthy and time-consuming hauling over the only adequate present crossing (about 2 mi. downstream in the heart of the busy town of Biddeford) that the contractor split his plants for dual production instead of using one for base and one for top.

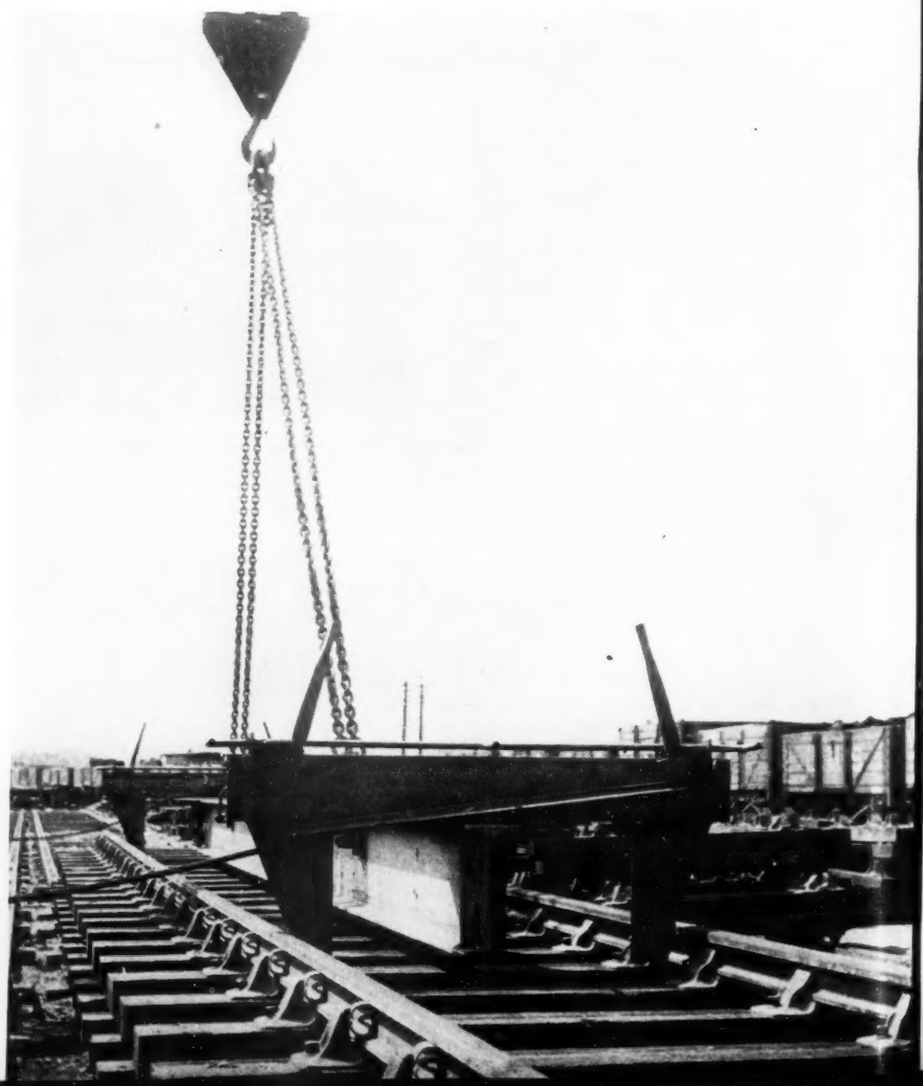
The highway is being built for the Maine Turnpike Authority, of which William B. Getchell, Jr., is executive director. Howard, Needles, Tammen & Bergendoff, New York and Kansas City, for whom L. D. Brown is project engineer, are consulting engineers for the entire Turnpike. They have engaged the Cambridge, Mass., firm of Stewart Associates Inc. as special consultants on the asphaltic paving. Fred Crabtree represents Stewart Associates in the field on the paving. Louis Capone is project manager for Perini, and Glen W. Nielson is in charge for Gibbons & Reed.

Prefabricated Track Renews British Railroads

PREFABRICATED TRACK in 60-ft. lengths, complete with rails, "chairs," and ties, has been adopted by England's Southern Railway for all its rail renewals. Lengths are assembled in a special yard, carried to the site on flatcars, and set in place by crane. An I-beam strongback suspended from the crane carries two brackets with movable arms which hook under the rails near each end of the section to prevent the track from buckling while being swung to position.

The Southern has found that the prefabricated renewals cut in half the time during which the line is out of service, and that in addition they save an estimated 13 percent in direct costs.

McGraw-Hill World News



→ STRONGBACK and levered clamps hold 60-ft. length of track preassembled in yard to speed rail renewal on congested British railway system.

Cited for Service

FRANK W. BARNES

AN APPRECIATIVE KING made him an officer of the Order of the Crown of Belgium for his successful completion of two difficult tunnels under the River Schelde at Antwerp. A grateful U. S. Navy gave him the coveted Meritorious Civilian Service Award for his war construction activities. His admiring associates in the Moles selected him for the annual member award in 1943 "in recognition of his enterprise, courage and resourcefulness notably in the field of foundations, bridges, tunnels, docks and piles and for his contribution to the National Defense."

These three awards are a tribute to the character and ability of Frank W. Barnes, assistant to the president of Merritt-Chapman & Scott Corp., New York. The tribute is all the more remarkable because Barnes, one of the country's great construction men, never had any formal engineering education.

Frank was born in Ayer, Mass., Feb. 13, 1882, and spent his early years in nearby Cambridge. He started his career in 1901 as a rodman for the Boston & Maine R.R., soon working up to chief of party and into construction. He left railroading in 1907 to join E. G. Williams, of New York, on the old Long Island Motor Parkway being built out of Mineola, then went to Baltimore on a sewage plant.

From 1910 to 1922 he was on big construction projects all over the United States, mostly for the J. G. White Engineering Corp. During this time he built steam and hydro power plants, street railways, irrigation and industrial works.

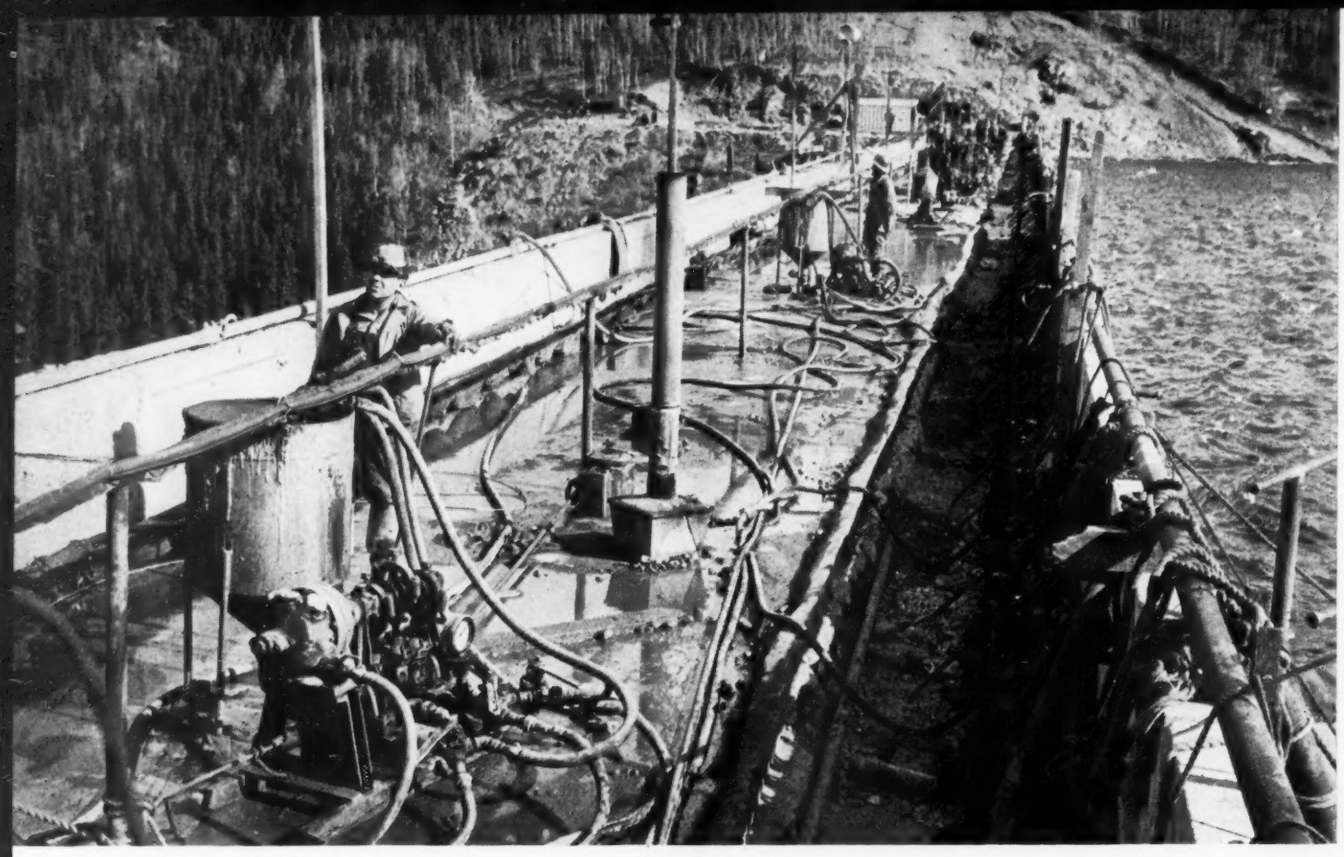
From early in 1922 until July, 1927, Barnes was with Parklap Construction Corp., New York, as vice-president. In this capacity he did some of his greatest work, including the Detroit vehicular tunnel, and the Schelde tunnels in Antwerp. At the latter job he froze treacherous soil into solid ground for sinking two 70-ft. ventilation shafts 87 ft. deep.

Joining Merritt - Chapman & Scott Corp. in 1937 as construction manager, his first job was building the Deer Island bridge in Maine, where he tailored prefabricated sheet steel cofferdams to fit an irregular rock contour. On the Potomac River bridge below Washington he not only drove the largest steel piles ever driven, 194 ft., but also devised clever prefabricated steel forms for deep concrete piers.

With the advent of the National Defense program in 1940, Frank became his company's representative with the Navy Bureau of Yards and Docks. His firm built the Quonset Point, R. I., base and helped train Seabees there. Offshore bases at Newfoundland, Iceland, Ireland and Scotland followed in rapid order, along with three more in this country. Then, in cooperation with the Geo. A. Fuller Co., who had been jointly interested in Quonset Point, his firm set up the big Seabee spare parts depot at Joliet, Ill. Meanwhile, M-C & S. manufactured and perfected the famous Quonset Hut.

On Jan. 1, 1947, Frank was named assistant to Merritt-Chapman & Scott's new president, railroad-trained Fred Lyford. This makes a good combination—a hard-headed construction man and an alert, aggressive business man. With $32,000,000 in contracts under way, and determined to retain the firm's place as a leading contractor, this team has plenty to do.

So long as he is in the business, Frank W. Barnes will continue to make construction history.



BATTERY of small 3-cyl. grout pumps force slurry into riser pipes in gravel backfill on new upstream face of Barker Dam. Precast slab wall is at right, width of backfill is defined by trench. Air supply lines for pump motors are on top of two parapets. Two burlap-wrapped grout supply headers are on center row standards (also carrying electric light wires) and at base of parapet to left.

Dam Face Grouted Against Hydrostatic Pressure

BUSIEST MAN on the job is JOHN HOFER, Prepakt Concrete Co. superintendent. He is standing alongside one of two burlap-wrapped grout headers.

IN FINISHING UP the new upstream face on the Barker Dam near Nederland, Colo., some 13,000 cu. yd. of gravel backfill was grouted against the hydrostatic pressure of a full reservoir. As previously described in CONSTRUCTION METHODS (June '47, p. 82) the Prepakt Concrete Co., Cleveland and Chicago, rebuilt and widened the 175-ft. high face of the 38-year-old dam by building a wall of precast slabs, doweled to the dam, and backfilling the space between wall and structure with $\frac{5}{8}$-in. and larger gravel. The reservoir was drained for this part of the work, and was later filled to spillway level for grouting of the backfill.

As shown by the accompanying pictures, all grouting was done from the crest of the dam through slotted riser pipes embedded as the backfill was placed. Grout consisted of No. 16 and finer sand, cement, water and a patented admixture. It was mixed at a central plant, set on left abutment, containing sand and cement hoppers and two sets of mixing drums and agitators.

From the agitators grout was forced by Gardner-

GROUT MIXING PLANT is set on left abutment of dam. Bagged cement enters plant on trussed and covered conveyor at left. Sand is charged by truck-crane clamshell. Float carrying water supply pump is in reservoir just beyond spillway opening in new slab face.

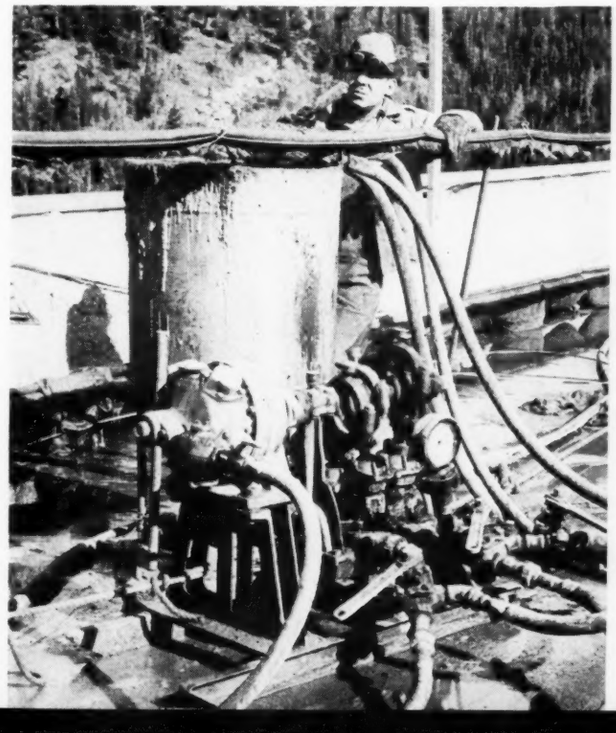
Denver gas-driven pumps into header pipes running full length of the dam crest. Headers were wrapped in burlap as protection against the hot sun. Spaced along the crest were ten 3-cyl. Bean-Boland air-driven grout pumps. Grout from the headers flowed into hoppers set above each pump. Each of the three cylinders of the small pumps discharged through a separate grout hose leading to one of the risers.

Air for driving these pumps was supplied through pipe headers by a battery of portable compressors. Water for the mixing plant came from a raft-mounted pump afloat in the reservoir along the dam face.

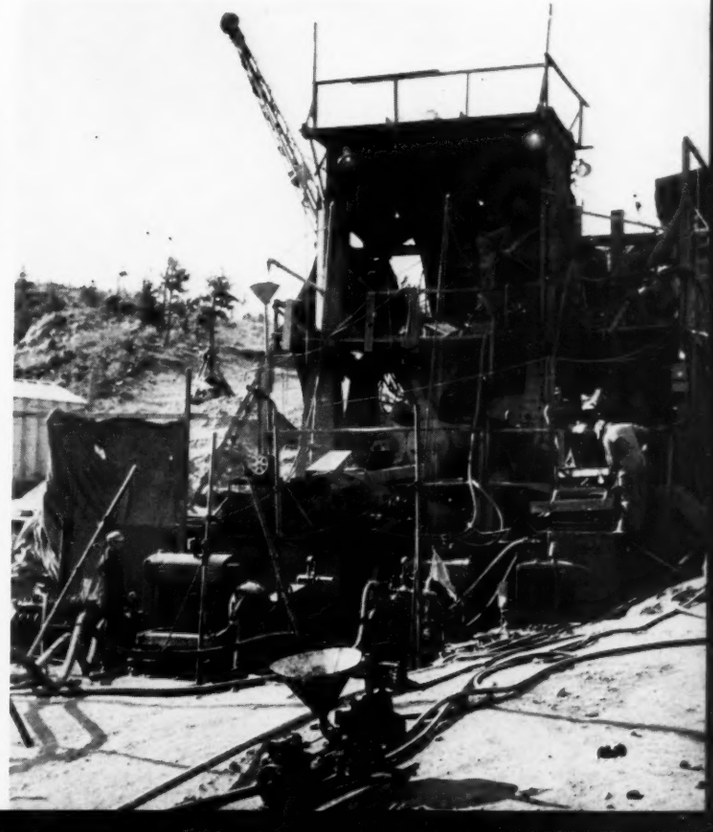
Filling of the reservoir accomplished a threefold purpose: (1) It restored the reservoir to service as a feeder to a hydro plant as soon as possible; (2) it put a load against the new slab face and gravel backfill to resist grout pressure, and (3) grouting could be done against full hydrostatic pressure.

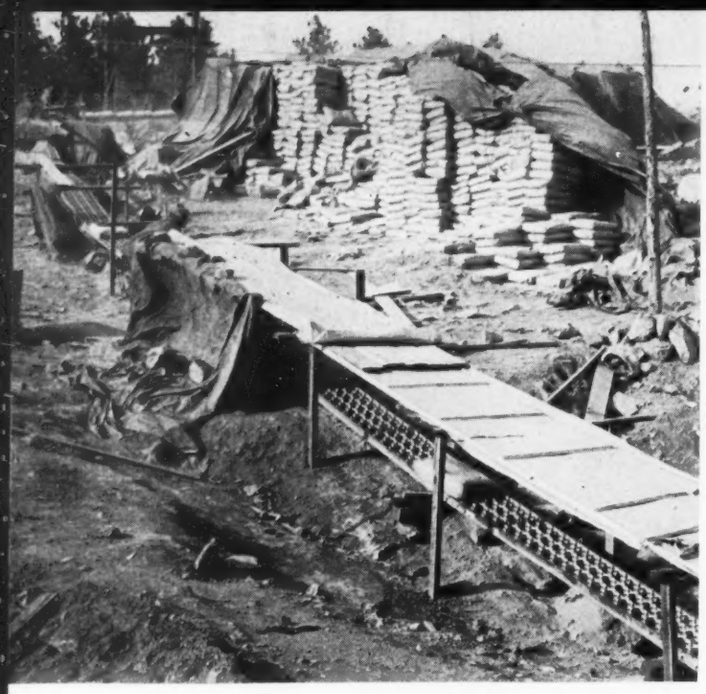
Grout was pumped simultaneously through all riser pipes, and was kept at the same general level throughout the backfill area. Grout hose lines were lowered to bottom of each riser pipe and left there

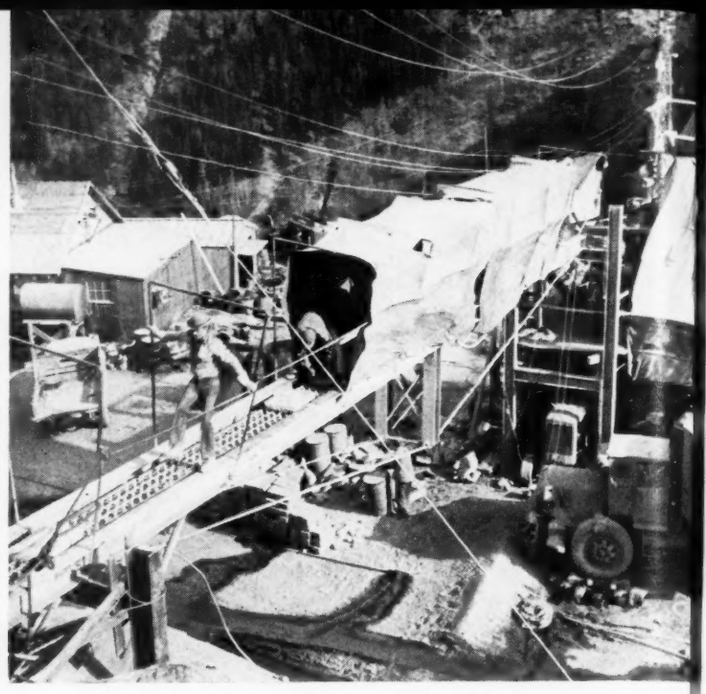
AIR-DRIVEN 3-cyl. Bean-Boland pumps (below) take grout from tanks filled from headers and force it into riser pipes against 10-ft. grout head and full hydrostatic head of reservoir. Each cylinder of pump serves separate riser.



MIXING PLANT (below) contains sand and cement hoppers and two sets of drum mixers and agitators. Two big Gardner-Denver pumps take grout from agitators and pump it to smaller units on dam crest through pipe headers.







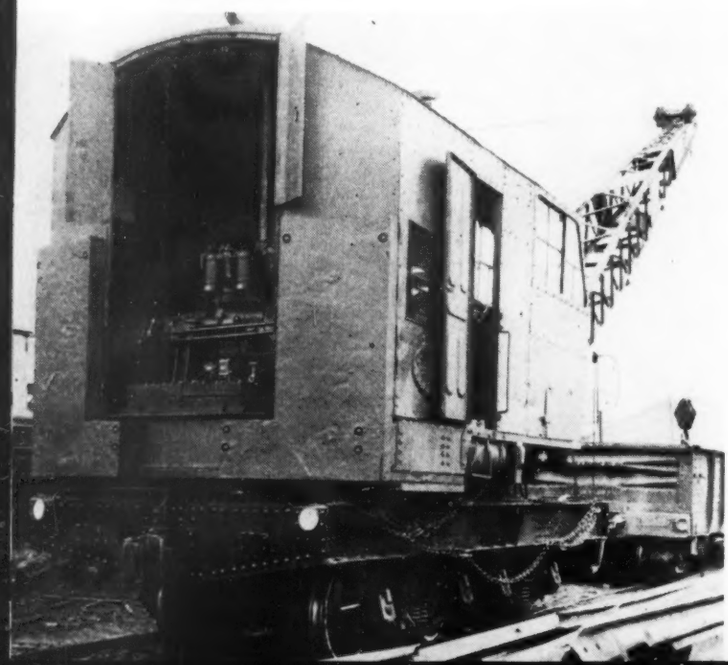
BAGGED CEMENT is transferred from storage piles (left) by gravity roller conveyor to mixing plant. Conveyor is carried across highway by trussed bridge, which also carries canvas shelter where bags are broken open. Empty paper bags are thrown into nearby incinerator and burned.

until the end of hose was 10 ft. below grout level. Then, as the grout rose through the gravel, spilling out through slots in the risers, the hose lines were slowly withdrawn to maintain a constant grout head of 10 ft. above hose discharge points. Grouting was carried on continuously until all the backfill had been packed.

The entire job was done for Public Service Co. of Colorado by the Prepakt Concrete Co. John Hofer was superintendent for the contractor. Raymond E. Davis, Berkeley, Calif., is consultant for the power company, E. Clinton Hansen is chief hydraulic engineer, and W. T. Neelands was resident engineer on the project.

Diesel Power Gives Old Crane New Life

DIESELIZATION of old electric yard service locomotive crane (below) results in increase of track speed from 1.2 to 9 mph., hook speed with two-part line from 36 to 268 ft. per min., and drawbar effort from 6,000 to 15,000 lb. Fuel consumption averages 1 gal. per operator hr.



SUCCESSFUL CONVERSION of an obsolete 35-ton McMyler-Interstate locomotive crane from electric to diesel power has given the Texas Steel Co.'s Ft. Worth plant a sturdy, versatile rig at low cost. Dieselization has more than doubled the crane's drawbar effort and increased its hook and travel speeds by at least 650 percent, and at the same time has made the rig independent of electric service outlets that formerly limited its operating range.

Plant maintenance forces substituted a HB-600 Cummins diesel engine developing 150 hp. at 1,800 rpm. for the crane's old electric drive. The engine operates a jack shaft, which replaces a 75-hp. electric traction and hoist motor, through a roller chain drive from a Twin-Disc hydraulic torque convertor. A 35-hp. electric motor for the swing gear was removed and replaced with a reversing countershaft assembly that is chain-driven from an idler in the main gear train.

In addition to major power changes, the cab was revamped for greater visibility and control levers were shifted to permit the operator to work seated.

LEGAL ADVENTURES OF TRACTOR CONN

By LESLIE JOBB

By recounting the experiences of Tractor Conn, who symbolizes the average contractor, this series of articles, each based on the decision of an American court and presented in plain, non-legalistic terms, is designed to help construction men avoid costly legal pitfalls.—Editor

The Case of the Stockholder or Creditor

A hotel corporation issued preferred stock guaranteeing 10 percent, if the profits permitted, and the holders were authorized, on default of the payment of dividends, to foreclose a trust mortgage to secure the preferred stock.

Then, on the insolvency of the corporation, a triangular dispute arose among preferred stockholders, common stockholders, and Tractor Conn, who had constructed the hotel.

"The rights of preferred stockholders cannot be legally secured by a mortgage of the corporate assets," the common stockholders contended.

On this point the New York Court of Appeals ruled in the favor of the preferred stockholders.

"Then that makes us creditors of the corporation, and entitles us to enforce our mortgage security," the preferred stockholders contended.

"Not so. You're stockholders, so far as I'm concerned, and can only enforce the mortgage after my debt is paid," Tractor Conn argued, and the Court ruled in his favor on this phase of the case.

"We are, therefore, of the opinion that the holders of the preferred stock are preferred stockholders of the corporation, and not creditors," was the reasoning of the Court on this point.

The Case of the Cancelled Contract

A Kentucky bank called for tenders for the erection of a new bank building and Tractor Conn put in a bid of $21,000.

"Your bid has been accepted," the bank wrote. The contract was duly signed and Tractor Conn began ordering materials and getting his machinery on the ground.

"We understand that you have contracted for a new bank building and, in view of the financial stringency and considering your own financial condition, we would strongly urge and even insist that the idea be abandoned," the state banking department wrote.

"Due to conditions beyond our control, we are forced to cancel our contract with you," the bank wrote Conn. The latter sued for damages and proved that he had lost $2,500 through the cancellation of the contract.

"The banking department practically ordered us to cancel our contract," the bank contended.

"It will not be disputed by anyone that the state banking commissioner has supervisory power over the state banks, but that does not mean that the bank cannot make a contract, otherwise legitimate, without first obtaining the consent of the state banking commissioner. That officer may advise against the making of unwise or improvident contracts, but we do not find in the law any authority which gives him supervision over state banks to such an extent that they cannot make a contract in the course of their business without his consent. He may advise them of the consequences of the making of a contract which will render the bank unsafe, and, if a bank makes such a contract and thereby renders itself a menace to its depositors and to those doing business with it, he may take such steps as are provided by law for the protection of the depositors and others. The fact that he has such power does not mean that a bank

(Continued on page 166)

More Legal Adventures of Tractor Conn Next Month

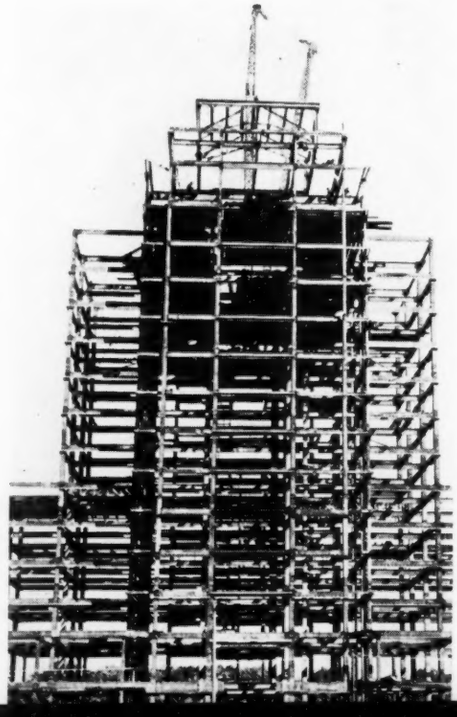
BIG AND BULKY, eight 67-ton curved trunnion support girders for Chicago's State St. bridge have to be shipped into city by barge instead of by rail for unloading at Chicago River site by Overland Construction Co., contractor. Working in close cooperation with W. W. DeBerard, city engineer, and Stephen J. Michuda, engineer of bridges, contractor hopes to receive rest of steel fast enough to permit completion of double-leaf bascule superstructure early in 1948. American Bridge Co. fabricates steel at Gary, Ind., plant. Structure is 108 ft. wide with 210-ft. clear opening.

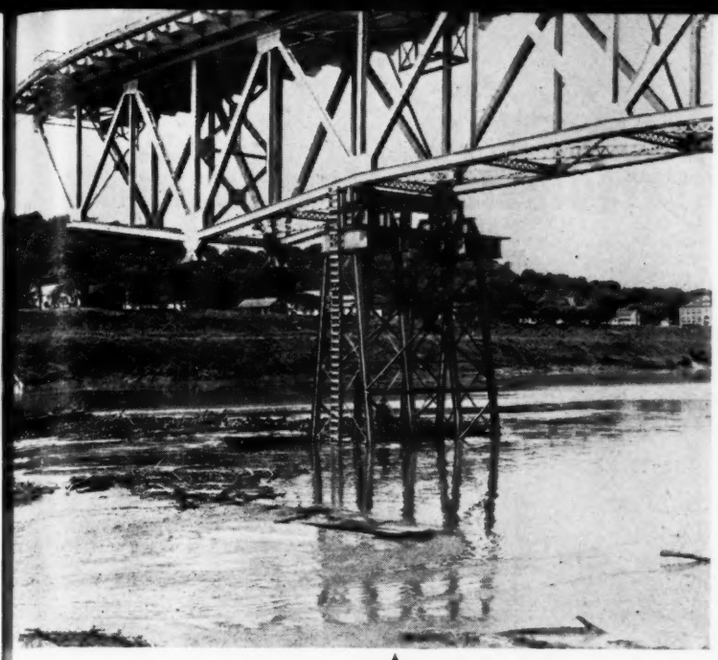
EXPANSION PROGRAM at Philadelphia Southwest Airport calls for addition of 150 acres, new terminal tower, three new hangars, and extension of two runways. Augustine Construction Co., Inc., Philadelphia, is operating more than 85 pieces of equipment on project, including ten Mississippi wagons, pulled by International prime movers, and ten Euclid bottom-dump wagons, all on Goodyear tires. Here one of units is being filled by Euclid loader.

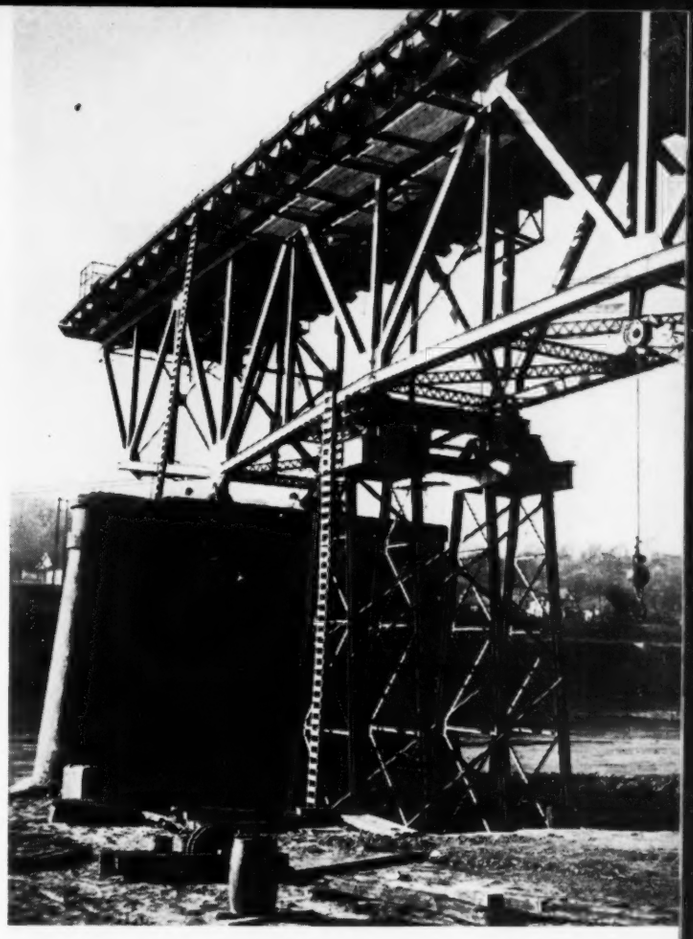
WELDED STEEL FRAMEWORK (below) nears completion for Herman Professional Bldg. at new Texas Medical Center, Houston. Requiring 1,400 tons of structural steel, its 14 stories with two additional penthouses make it one of tallest buildings ever erected by welding. Eleven welders used 40,000 lb. of Fleetweld No. 5 rods. Linbeck & Dederick Construction Co., Houston, are general contractors, with Consolidated Steel Corp. of Texas as fabricators and erectors.

Photo, Lincoln Electric Co.

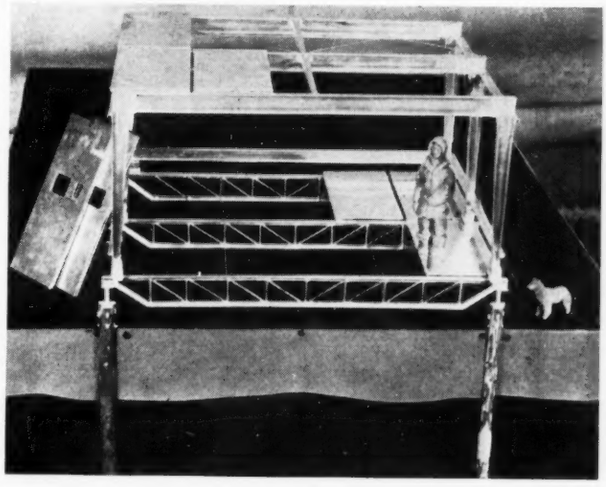
← DEMOLITION OF BUILDINGS for site of new United Nations headquarters on First Ave. in New York City, begins with ceremony as bricks from two stores are knocked out by (left to right): BYRON PRICE, U.N. Assistant Secretary; Manhattan Borough President HUGO ROGERS; and Mayor WILLIAM O'DWYER. Wreckers & Excavators, Inc., of Maspeth, N. Y., will finish the job.







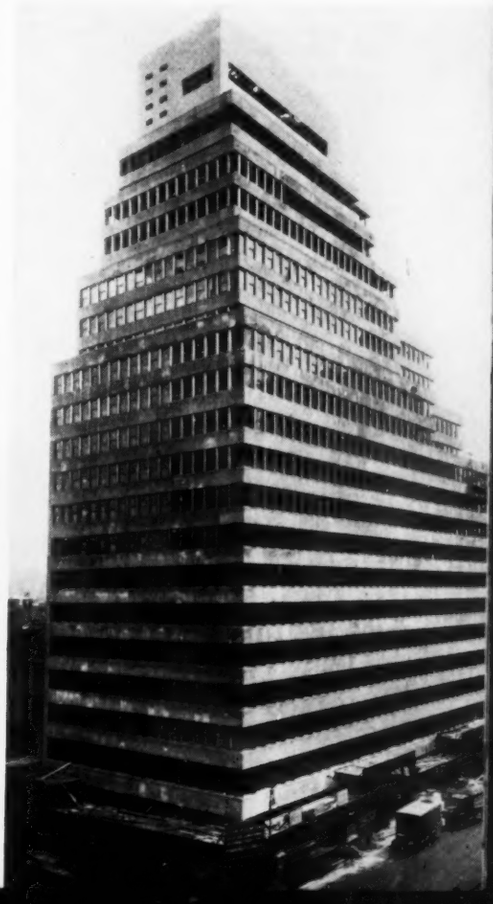
FLOODING OUT of construction jobs is common in Middle West today, as made evident by these normal and high-water conditions on Kansas River project at Kansas City, Kan., where William J. Howard, Inc., contractor, Chicago, erected falsework tower on foundation in cofferdam to pick up trusses of 12th St. bridge from unsafe pier which had to be removed, after part of bridge had been swept away in previous floods. View (right) shows normal low water in November, 1946; view (above) reveals flooded site in early June. Sverdrup & Parcel, St. Louis, are consulting engineers on reconstruction of bridge for Wyandotte County, Kan.



FAST CONSTRUCTION with unskilled troops dressed in heavy clothes is promised by new-type all-aluminum building designed by U. S. Corps of Engineers for Arctic service. Structure consists of bolted rigid-frame bents of 20-ft. span and 8 ft. high, set 8 ft. apart, which make up into single or multiple units in two directions. Floorbeams are light trusses resting on screw jacks.

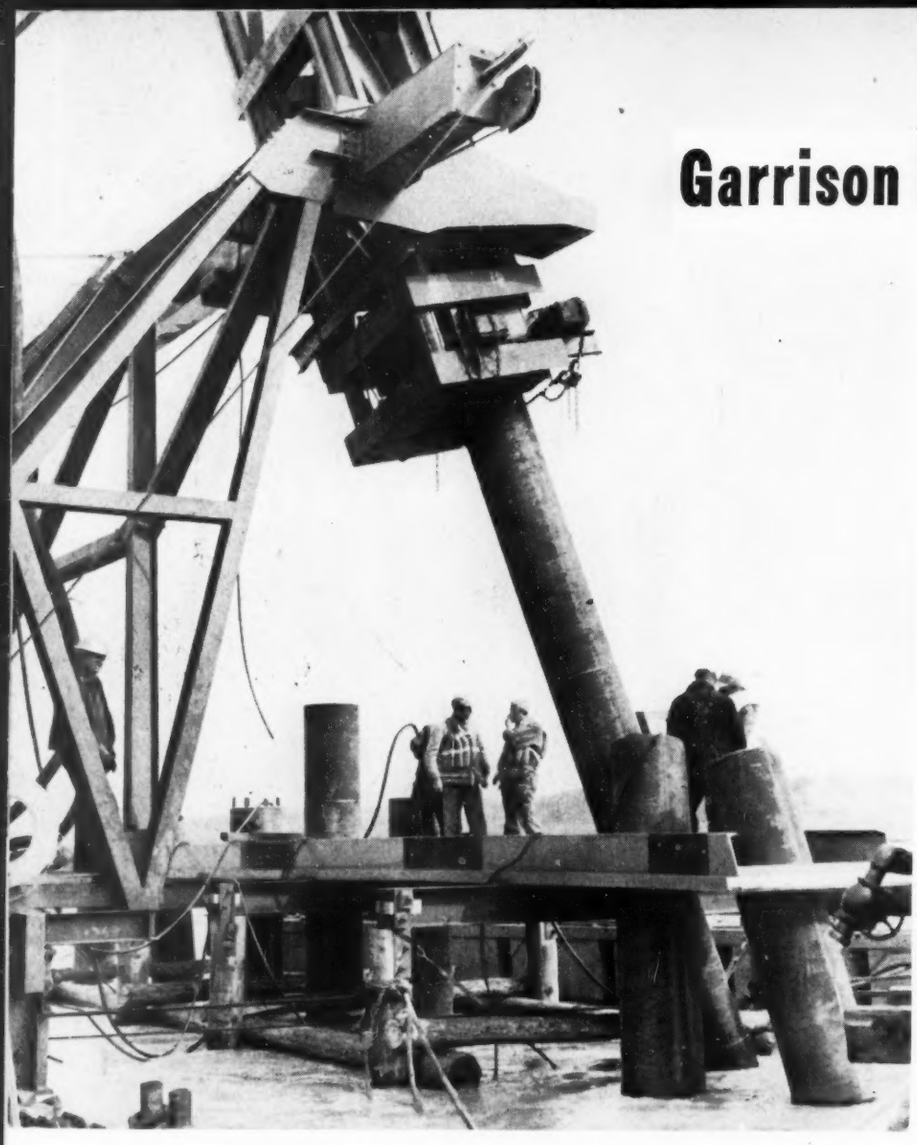
FIRST POSTWAR OFFICE STRUCTURE (below) ready for occupancy in New York City, Tishman Bldg. at Park Ave. and 57th St., uses light steel and glass perimeter construction, made possible by placing perimeter columns on 9-ft. 8-in. centers and transferring wind stresses to interior columns. Tishman Realty & Construction Co. built it.

Seidman Photo Service



LOCKS NO. 27, main feature of 8-mi. canal on Mississippi River (below), will be built for $16,626,000 by River Construction Co., which includes six heavy contractors: Turner Construction Co., Spencer, White & Prentis, Inc., and Raymond Concrete Pile Co., all of New York; Winston Bros. Company and Al Johnson Construction Co., both of Minneapolis; and Morrison-Knudsen, Inc., of Boise, Ida. It will take more than 3 yr. to complete. U. S. Corps of Engineers awarded contract.

Garrison Dam Bridge Piles



VERSATILITY of leads permits driving piles in any direction and degree of batter. Tapered yoke riding on horizontal moonbeam and shifted by cable pull controls transverse movement of lower end of leads. Traveler frame at left, sliding on I-beams on barge deck, governs fore-and-aft movement of moonbeam. Bottom section of leads is telescopic for extension. Piles are guided by steel plate template that remains in place as bottom form of pier cap. Note life jackets worn by crew members.

STEEL PIPE PILES for the piers of the permanent construction bridge across the Missouri River at Garrison Dam in North Dakota batter in all directions. When the Missouri Valley Constructors, Inc., Leavenworth, Kans., and Winston Bros. Company, Minneapolis, jointly took on the $1,300,000 bridge contract for the Army Engineers last year their first job was to design a floating piledriver big enough to handle 24-in. steel pipe piles 100 ft. long and flexible enough to drive the tubes in any position without excessive maneuvering of the driver.

Despite the speed necessary to get piledriving started before the 1946 construction season waned, the contractors designed and built a most ingenious floating rig equipped with universal tilting leads on a two-way swing mounting. Results speak for themselves, for the driver has met all requirements in sinking the big piles to precision well within specified tolerances. Driving was completed in June.

The bridge, 1,350 ft. long, carrying both rail and highway traffic, consists of nine 150-ft. girder spans. Each of the eight piers is founded on 15 24-in. steel pipe piles 100 ft. long, three driven vertical, 12 on a 4 to 12 batter. These batter piles point in six different directions to give the piers maximum stability against scour, ice and floods.

Piles were fabricated by Bethlehem Steel Co. from ¾-in. plate in 50-ft. sections welded into 100-ft. lengths on the job. They were driven with an open bottom end, which was reinforced for 2 ft. with two ¾-in. plate collars beveled at the cutting edge.

High Bearing Capacity

The three downstream piles in each of the six deeper water piers were driven to a bearing load of 180 tons in the glacial till of the river bed. All other piles were driven to 150 tons bearing. The driver was equipped to handle two 4-in. water jets delivering 1,000 gpm. at 125-lb. nozzle pressure. Compressed air jets attached to the water jets also could deliver 250 cfm. air at 100-lb. pressure at the nozzle. However, experience showed jetting proved effective only in thin sand overburden, so it was soon discontinued.

Two types of hammers were used, a Vulcan No. OR, and a McKiernan - Terry No. 10S. Both proved capable of sinking the piles

FINISHED BENTS indicate complex batters of various piles. Guide template, carried on wood-pile framework, is left in place as bottom form for pier cap.

Driven With All-Position Leads

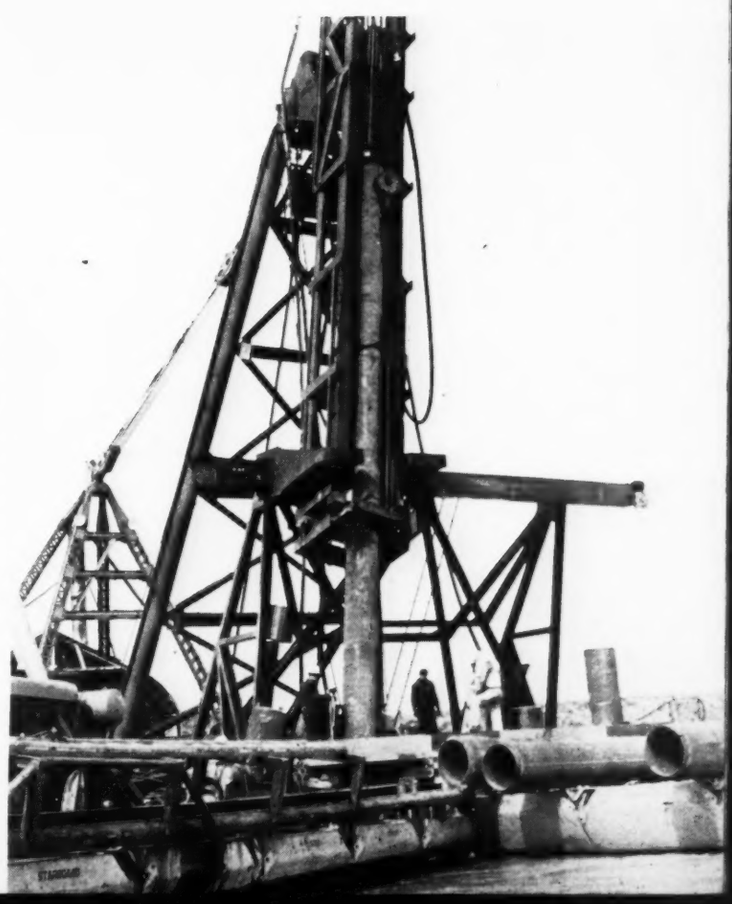
FLOATING PILEDRIVER with versatile, all-position leads drives bents for Garrison Dam bridge.

down to 70 or 80 ft. of penetration in the glacial till. Spotting of the piles was aided by a permanent ⅝-in. steel plate template at each pier, left in place to form the bottom of the concrete pier cap. These plates, 6 ft. wide and 54 ft. 4 in. long, were set in advance on timber pile falsework.

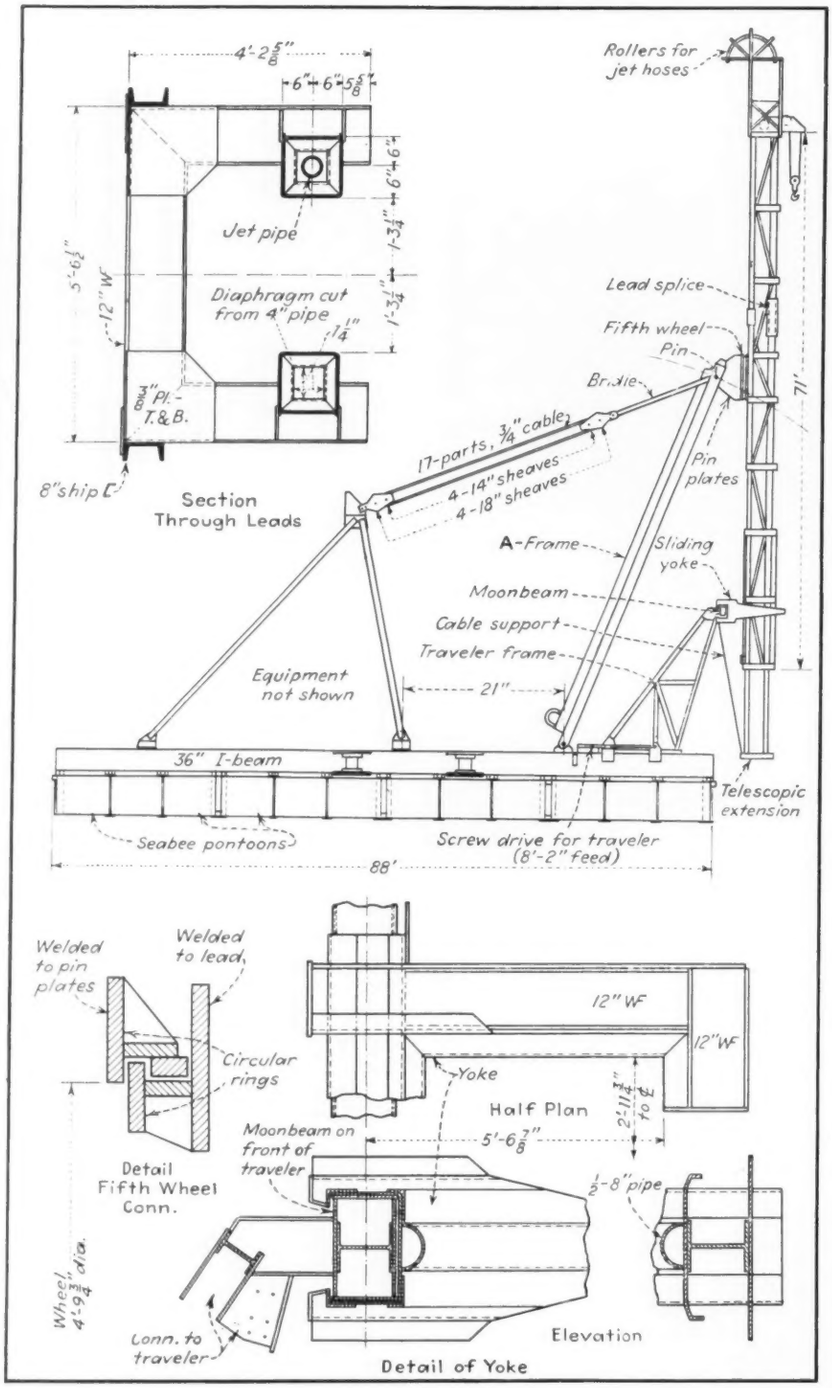
Versatile Piledriver

A 44x88-ft. barge for the piledriver was assembled with 84 Navy Seabee steel pontoons arranged in four groups of 21 each. Lengthwise over the full length of barge were placed two 36-in. I-beams, spaced 24 ft. apart, to serve as a base for the rig and to distribute the weight over the pontoons.

Welded steel-frame leads 71 ft. long are suspended above midpoint by a universal connection to the top of a welded A-frame, shown by an accompanying drawing, with tubular legs pin-connected to shoes on the 36-in. I-beams. Inclination of the A-frame is controlled by 17-part boom falls from



FRONT VIEW of driver shows how yoke fits around lower part of leads. Yoke slides transversely on moonbeam carried by traveler frame. Leads are supported just above midpoint by universal connection to tubular-leg A-frame. Barges in foreground are those for auxiliary pipe-handling crane and pipe transportation.



FEATURES controlling position of leads are shown in outline sketch and details. Supporting barge, 44x88 ft., is made up of 84 Navy pontoons. Two 36-in. I-beams, set longitudinally on barge, carry the piledriver superstructure.

a four-leg derrick over a hoist house toward the stern of the barge.

Below the universal connection to the A-frame, the leads are trained in desired direction by a guide yoke, mounted on a traveling frame which can be moved fore and aft along the top flanges of the 36-in. beams. In addition, the yoke can be shifted in transverse direction, to starboard or port, by cable pull along a horizontal box-section beam attached to the traveler. These features are indicated by accompanying detail sketches. In effect, the horizontal member on which the yoke slides functions as a moonbeam.

By fore-and-aft motion of the traveler and transverse motion of the yoke along the moonbeam, the leads may be set at any angle within the limits of the rig design and at any point on a full circle. The traveler frame has a maximum fore-and-aft movement of 8 ft. 2 in. Travel of the sliding yoke along the horizontal moonbeam is limited to 12 ft. on either side of center.

Movement of the sliding frame along the top flanges of the 36-in. I-beams is actuated through the full travel distance of 8 ft. 2 in. by two screw drives, one on each side. The screws are turned either by hand cranks or by air motors through chain and sprocket connections. They react against thrust bearings mounted on the 36-in. beams. Along the moonbeam, position of the yoke is regulated by two sets of falls reeved through sheaves, attached to end plates on the beam, to a swing engine mounted on the traveler.

A-Frame Connection

Universal connection of the 70-ft. steel leads to the A-frame makes possible the two-directional articulation. For the fore-and-aft rotation of the leads, the plates supporting the leads are pin-connected to the A-frame, as shown by the drawing. Less obvious is the "fifth wheel" connection which permits rotating the leads through a transverse arc. As indicated by a detail section showing the rim of the "fifth wheel," ring plates about 5 ft. in diameter, welded to the leads, carry a flange which travels inside a groove of a matching circular track welded to the pin plates at the top of the A-frame.

Hammer guides in the leads are hollow box-section members in which the 4-in. jet pipes can operate, aligning the pipes close to and parallel with the piling. In the lower section of the leads is a telescoping extension which can be used to lengthen the leads.

By means of the two-way tilting adjustment of the leads, the floating rig is able to drive all piles for a pier foundation while anchored broadside to the stream on one side of the pier. Because nearly all maneuvering of the barge requires sidewise movement, the hull was designed with raked sides, rather than raked ends. This

(Continued on page 168)

WANTED . . . A NAME. Weird as it may look, this five-boom, five-mast, hand-power floating crane is clearing out bridge and ship debris from the Rhine River. Originally designed and partly built by the Germans, it was discovered in a Rhine port by French engineers who completed the rig and improved it by adding backstay tower supports and surrounding the hull with barges for additional buoyancy. Anyway, it seems to work, but ye bewildered editor is at a loss to name it.

Believe It or Not . . .

THIS IS A FLOATING CRANE

THE FRENCH are a remarkable race. They are also economical and hate to see anything go to waste. They proved these two points recently when confronted by a tough bridge salvage problem on the Rhine River in Germany, and in doing so brought into operation one of the most bizarre floating cranes ever seen by man.

This crane, which is yet to be described by a single suitable name, has five booms and five masts. Approaching it from the front it resembles a hay loader, and it hardly makes sense from any other angle either. Yet it has a capacity of 400 tons even though its load lines are operated by a battery of hand hoists.

The accompanying picture describes it better than words, but the story of how it was developed and used is unusual even for the Rhine where all manner of lifting devices have been pressed into service to clear the river of bridge and barge wreckage.

It seems the French had a bridge span to remove that had broken into two pieces weighing 850 and 250 tons respectively. They wanted to save this span as intact as possible and thought if they could move it to the bank that it would be out of the way and could be salvaged at leisure. The 250-ton piece could perhaps be lifted, and the larger could be dragged into a hole dredged in the bank if a high capacity crane could be obtained.

At one of the German harbors on the Rhine was the beginning of a tremendous five-boom crane that might answer their purpose, so they set about completing it. It was the German's plan to mount it on a car ferry, but the French decided this would not be stable enough in itself, so added Rhine barges fore and aft and at the sides. They found the necessary guy cables for the backstays and the smaller lines for the lifting cables and installed them. There are five parts of line on each boom so that a 25-part pull was available.

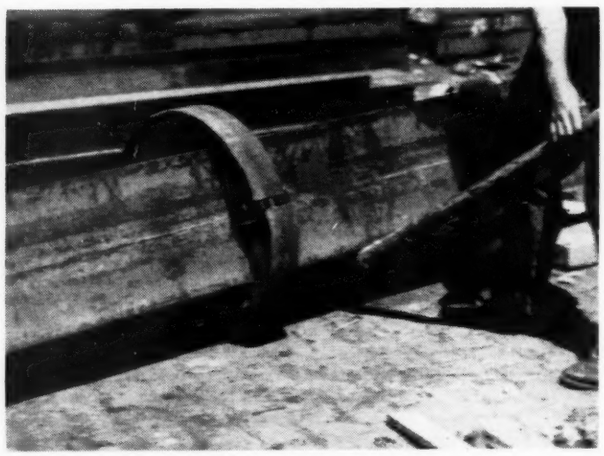
By mounting the 850-ton section of the bridge truss on rollers and adding a counterweight on the shore end it was possible to reduce the weight to be lifted to within the capacity of the crane. To get all of the lifting force possible, however, the French engineers supported the backstays by a timber staging. This reduced the dead weight on the masts, and made the strength thus saved available to resist the vertical live weight of the truss. The operation was carried out successfully. In the accompanying picture the crane is lifting the 250-ton section on to a barge prior to tackling the bigger piece.

At present the crane is working on the clearance of the steel of the famous Remagen bridge, and there are plenty more jobs awaiting its big hook.

EXEC. ED. NOTE: This yarn was sent in by Waldo Bowman, Editor of "Construction Methods," during his recent tour of Europe. It's a good thing he included a photograph to substantiate the story, or the staff would suspect he had tangled with too much pre-war Cognac. His comparison of the rig with a hay loader is natural, as Waldo hails from Kansas. You urbanites who want to know what a hay loader looks like, take another look at this crane.

HOW ...they did it

SMOKESTACK 120-ft. high is reinforced by welding 1/4-in. steel plates to steel shell. Plates were cut and rolled so that four sections would circumscribe 7 1/2 ft. diameter of stack. Joints were beveled 60 deg. and sections welded together with Fleetweld 5 shielded-arc electrodes. Mertz Co. of Cleveland did job for Cleveland Electric Illuminating Co. Photo, Lincoln Electric Co.



FOR TURNING STEEL PILES to permit tip reinforcing to be welded downhand, MacArthur Concrete Pile Corp., New York, mounts section in simple 2-ft. roller of 3/8-in. plates with 1/4x3-in. steel tire. The 14-in., 73-lb. pile, 40 to 68 ft. long, is jacked up at one end, semicircular halves of roller are fitted around pile at mid-length and bolted together, jack is removed and pile balanced on roller is turned easily by one man. For hard driving through heavy debris fill on extension of elevated highway along Manhattan's lower west side, pile points are reinforced with four 5x5-in. angles, 14 in. long, fillet and plug welded to flanges and web.

← TO MAKE CONCRETING at Fall River Dam in Kansas as safe as possible, Arcole Midwest Corp., contractors, have installed floodlights on high steel tower to light up dam area at night and have built husky double stairway, with three handrails, from road to foundation level.

TO KEEP TRAFFIC from damaging temporary 24-in. steel pipeline carrying irrigation water from Alva B. Adams tunnel on Colorado-Big Thompson project at Estes Park, Colo., U. S. Bureau of Reclamation fastened railroad rails to concrete blocks strapped to pipe as shown below, where line follows highway cut. Aluminum paint on rail increases its visibility.

DEFLECTOR DEVICE consisting of pipe with winged side vents disperses pressure stream resulting from drilling through concrete at shaft bottom into live Chicago water tunnel under 130-ft. head. Deflector pipe is screwed into top of shut-off valve previously mounted on sleeve grouted into starting hole in concrete. Miners drill inside this pipe column until drill strikes water. As drill is withdrawn, winged pipe device deflects water jet until valve can be closed. After removing special deflector pipe from assembly, construction division of Chicago Department of Public Works uses valve and sleeve in drilled hole for grouting bulkhead in tunnel under bottom of shaft.

IRRESISTIBLE FORCE almost meets immovable body, but Caterpillar D8 tractor and 8S bulldozer manage to swamp out access road at Dixon Canyon Dam, Colo., through some mighty tough going. Rhoades-Shofner Construction Co., Ft. Collins, Colo., is doing job for U. S. Bureau of Reclamation.

ALL-WELDED RAKE mounted on bulldozer frame removes oversize stone from West Canal embankment on U. S. Bureau of Reclamation project in Washington. Joint contractors, Utah Construction Co. and Winston Bros. Company, got the idea of hanging special rake on tractor pulling tandem sheepsfoot rollers.

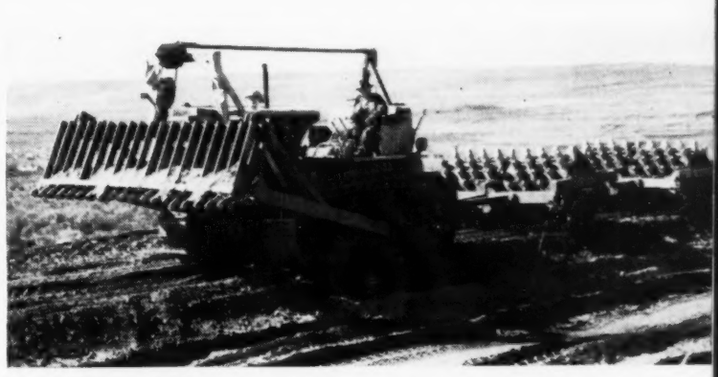


Photo by Bauman, U.S.B.R.

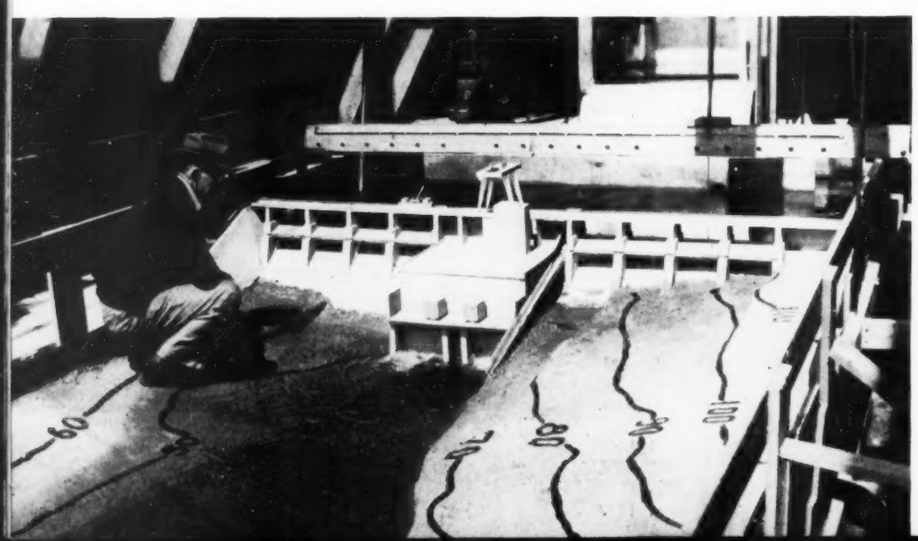
TO CLEAN 20-YR. ACCUMULATION of debris and infiltrated sand from 8-ft. concrete pipe sanitary sewer carrying 25 mgd., M. W. Bailey Co., Astoria, N. Y., contractors for job for President of the Borough of Queens, N. Y. C., devised square section 1-yd. drag-scraper bucket (l. and r.) with center hitch and digging lips on each face that insure full loading in any position as Northwest crane hauls unit through pipe between manholes 500 ft. apart. Gasoline winch above downstream manhole retracts empty bucket at 400 ft. per min. Surplus Navy rubber suits protect men (right) in sewer who rig hauling line through snatch block at base of manhole to prevent cable from binding on corner of pipe.

ROCK FOR COFFERDAM comes from 8,000-cu.yd. ledge excavation for diversion channel. Here, Koehring Dumptor fills stone box as Link-Belt 1½-yd. crane operating on filled unit waits to dump rock into crib pockets or checks. Weighting of cribs calls for 6,000 cu. yd. of rock. Cofferdam will be faced with 2-in. planks and sealed with clay and gravel toe fill.

Lots of Work...But Little Pay Dirt

CURRENT OPERATIONS at Maine's biggest postwar hydro project, Union Falls Dam on the Saco River 9 mi. above Biddeford, are a good example of the preliminary — but expensive — work a contractor must do before he gets lined up on pay-quantity items. Sanders Engineering Co., Portland, contractor on the hydro project for Central Maine Power Co., is now busy cutting a diversion channel, setting up a rock-filled crib cofferdam, preparing for winter concrete operations, drilling wells to drain a wet sand formation, clearing the reservoir and cutting the timber into 1½ million b. ft. of form lumber, and is building 2½ mi. of access highway after extensive widening and improvement of county roads for their own use. The first real pay work will be excavating 10,000 cu. yd. of rock from the foundation area.

Union Falls Dam will be a 50,000-cu. yd. concrete gravity structure with a crest length of 481 ft. In a powerhouse near the center of the dam, two 9½-ft. Kaplan runners operating under a normal



MODEL OF UNION FALLS DAM shows central powerhouse, log sluice, and service roadway on extensions to 6½-ft. wide piers supporting eight Tainter gates. Watching simulated normal flow of 3,100 sec. ft. through 1 to 50 scale model is its builder, LEONARD F. SANBORN, engineer for Nepsco Services Inc.

MEN IN CHARGE of Union Falls power project are KARL WHITCOMB, resident engineer for Nepsco Services Inc., which is handling the hydro job for Central Maine Power Co.; and MORRIS ROGERS, superintendent for contractor, Sanders Engineering Co.

BELOW OLD DAM, which is to be removed, Lima Paymaster crane sets timber for upstream wall of rock-filled crib cofferdam. Lower 10 ft. of cofferdam—from river bed to normal water level—will be interlocking prefabricated cribs upon which additional 15-ft. height will be built in place, continuous for cofferdam's 800-ft. length.

75-ft. head will drive two General Electric generators developing 12,000 kva. each. Four 18 x 32½-ft. Tainter gates flanking the powerhouse on each side will raise normal pond level to El. 126 above tailwater at El. 51. Dam base thickness will be about 70 ft.

The east, or left, end of the dam will terminate in a nearly vertical rock cliff. The west end will have a short concrete gravity retaining wall separating the concrete spillway section from an earth dam or embankment formed largely by an existing clay ridge jutting out into the river valley. To increase the height of this hill, 450,000 cu. yd. of pervious fill and 25,000 yd. of impervious boulder clay will be spread and compacted in 6-in. layers. Consolidation will be by sheepsfoot tamping rollers on the impervious material, and by travel of hauling equipment on the rest.

Plans call for a rock-filled timber crib cofferdam to divert the river through a temporary waterway being cut along the west side

TIMBER CRIBS for first lift of cofferdam are tailored to fit river bottom and are assembled on west or right bank. International T9 tractor with Trackson crane handles 12x12-in. members which will be double-fastened with ¾-in. pins.

JOB SAWMILL, upstream from damsite, produces special timbers, and all of 1½ million b. ft. of dam form lumber, from trees cut in clearing operations on project, floated downstream and caught by log boom shown behind mill. Cofferdam timbers are surplus launching ways from Maine's wartime shipyards.

CABLE-TOOL DRILL RIG sinks 24-in. casing 50 ft. to rock for drain well to take seepage from sand lens beneath clay ridge forming earth portion of dam. Layne New York Co.'s Keystone driller mounted on GMC truck put down ten gravel-packed wells with 6-in. slotted screens.

TO CARRY HEAVY TRAFFIC to damsite, contractor built 2½ mi. of new highway and did extensive maintenance and widening on existing county roads. Gravel for roadwork comes from huge pit on project and is loaded by Lorain 1½-yd. shovel into Athey side-dump trailer drawn by Caterpillar DW10 tractor.

of the river. The powerhouse, east portion of the dam and part of the west section will be concreted within the cofferdam during the winter to bring them above the expected spring flood of 10,000 sec. ft., more than three times the normal flow. While the section started within the cofferdam is being topped out, the diversion channel will be unwatered and the right end of the gravity dam completed.

Nepsco Services, Inc., Augusta, designed and are supervising construction of the Union Falls project for Central Maine Power, and are represented by Karl B. Whitcomb as resident engineer. For the contractors, Sanders Engineering Co., Morris Rogers is superintendent.

DIVERSION CHANNEL (below) 60 ft. wide is cut in vertically seamed granite to pass estimated 10,000 cfs. flood... As Ingersoll-Rand wagon drills powered by two Chicago Pneumatic 500-ft. compressors sink 18-ft. holes on 3-ft. centers for next round, Northwest 1½-yd. shovel loads out rock. Ledge is blasted with 8 lb. of 40-percent dynamite in each of 12 to 14 holes, and rounds are fired instantaneously with electric caps. Powder consumption averages ¾ lb. per yd.

Hydraulic Earthmover Cuts Clean Ditches In Wet Ground

MULTI-PURPOSE RIG dresses shoulders and digs sharp clean drainage ditches in wet earth on North Carolina road job. Truck-mounted hydraulic machine has tilting bucket and telescopic boom that can rotate in two directions in addition to usual swing.

IN LOW SWAMPY AREAS with plenty of rain, where highway drainage ditches are the most necessary, they are often most difficult to dig. To lick such a situation on a 27-mi. roadbuilding job fringing White Oak Swamp near Jacksonville, N. C., the Nello L. Teer Co., Durham, put to work a Gradall—a new hydraulic multi-purpose earthmover—that finished up precision ditching, bank sloping and shoulder dressing operations otherwise impossible to complete except by hand labor.

Turntable-mounted on a truck operating on the pavement, the machine's 24-ft. boom, with a 72-in. wide bucket, reached work in soggy ground and narrow cuts where heavy equipment could not maneuver. Long-reach assignments included excavating ditches beyond 10-ft. shoulders.

To dig shallow sloping ditches on the job, the Gradall's operator positioned the bucket at the far side of the ditch, cut down at the proper slope, and then, at ditch bottom, angled the bucket upward to cut the shoulder-side slope. Periodically, he set the bucket to correct grade and dressed the shoulder as the rig moved along.

SENSITIVE HYDRAULIC CONTROL (below) plus hand- and arm-like action of bucket and boom give precise manipulation to feel and uncover hidden obstacles without damage. Here, buried culvert beneath driveway cross-over is located and opened for re-use.

Present and Accounted For...A PAGE OF PERSONALITIES

APPOINTED EXECUTIVE SECRETARY of Associated Equipment Distributors, FRANK G. KNIGHT succeeds Carol F. Winchester, whose resignation becomes effective Sept. 30. A. E. D. headquarters are being transferred from Washington, D. C., to Chicago. Mr. Knight has been assistant secretary of organization for last 3½ yr.

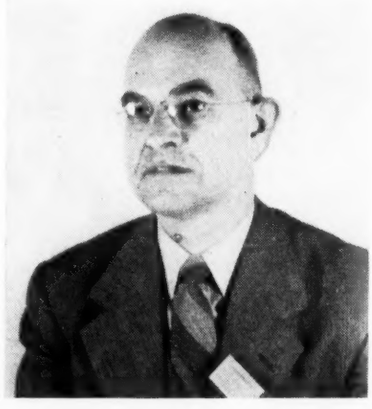
ONLY ENGINEER on board of design for United Nations permanent headquarters at New York is NIKOLAI D. BASSOV of the U.S.S.R. He was guest of honor at luncheon meeting sponsored by Metropolitan Section, American Society of Civil Engineers, at which J. P. H. Perry, vice-president, Turner Construction Co., presided.

Official United Nations Photo

NEW HIGHWAY COMMISSIONER of Connecticut is G. Albert Hill, who succeeded William J. Cox upon his retirement July 1. Mr. Hill has been chairman of chemistry department at Wesleyan University, Middletown. He is a former member of state water commission.

TEXAS CONSTRUCTION COUNCIL is headed by C. P. DODSON, Mayor of Decatur and president of League of Texas Municipalities.

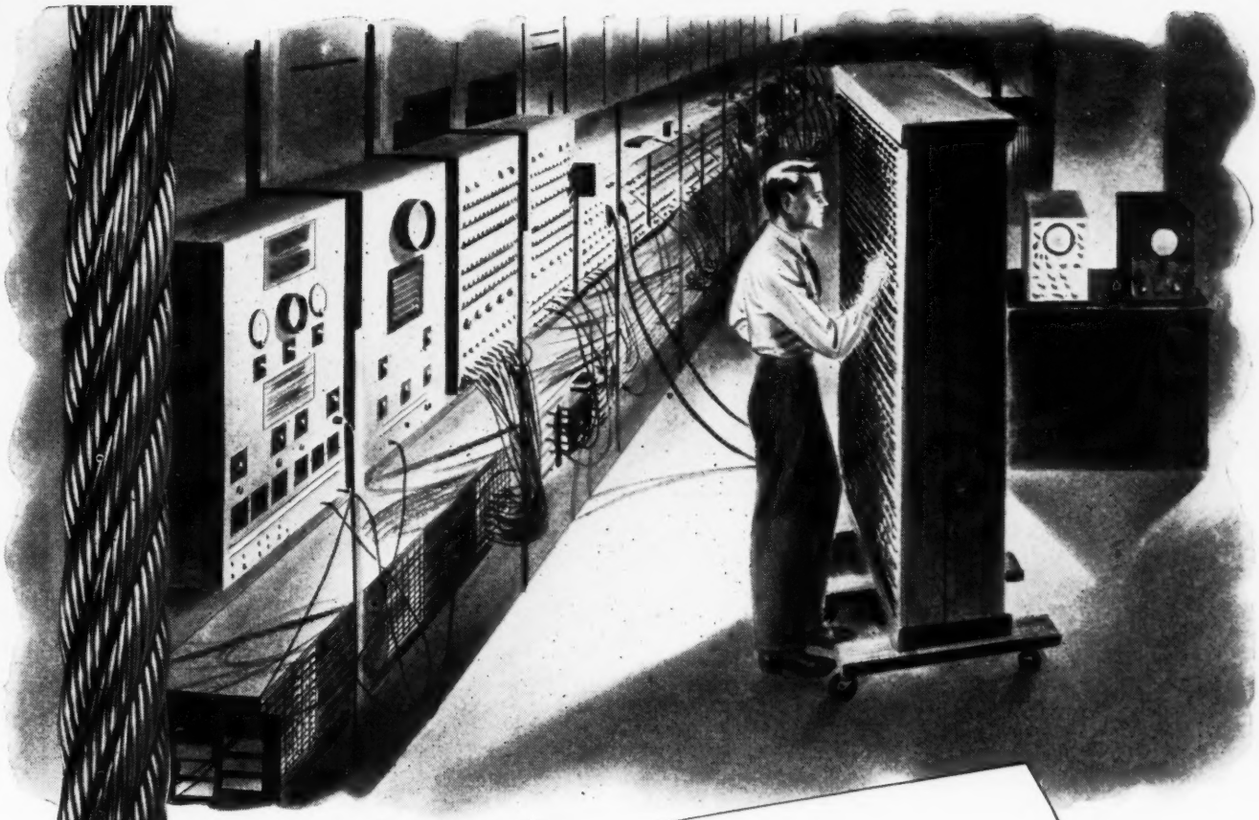
NAMED EXECUTIVE SECRETARY of Kentucky Association of Highway Contractors is W. O. SNYDER, former field engineer for Portland Cement Association in Kentucky. He was for 3 yr. chief engineer of Kentucky Department of Highways.



DIRECTOR OF PLANNING for Ethiopia is PERRY A. FELLOWS (below), former member of general review board of War Assets Administration and one-time chief engineer and assistant administrator of Works Projects Administration. He will also serve Emperor Haile Selassie as economic and industrial adviser.

ASSIGNED as District Engineer of New Orleans District, Corps of Engineers, is COL. JOHN R. HARDIN (below), former deputy to president, Mississippi River Commission, and to Division Engineer, Lower Mississippi Valley Division.

APPOINTED HEAD of department of civil engineering at Rensselaer Polytechnic Institute, Troy, N. Y., is REAR ADMIRAL LEWIS B. COMBS (below). Appointment becomes effective next January with Admiral Combs' retirement from Civil Engineer Corps, U. S. Navy.



Precisionbilt LIKE AN ENIAC*

J&L WIRE ROPE

PERMASET PREFORMED

Like an ENIAC,* J&L Wire Rope is Precisionbilt to save you time and money. J&L rope is made of J&L Controlled Quality Steel to last longer and reduce the down time of your equipment. It is a wise economy to standardize on J&L Precisionbilt Wire Rope for all uses. Specify it on your next order.

**The ENIAC (Electronic Numerical Integrator and Computer) is a phenomenal "thinking" machine that does in seconds scientific and engineering calculations which would require weeks—even years—if done with pencil and paper by trained computers.*

J&L STEEL

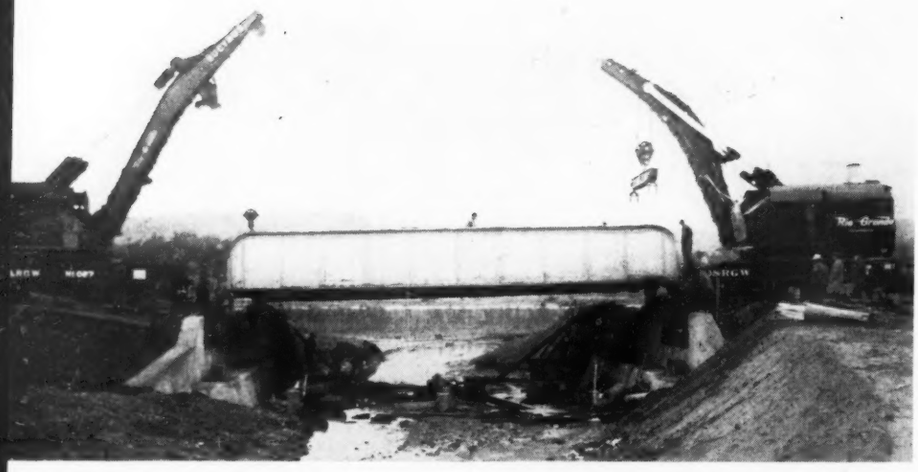
JONES & LAUGHLIN STEEL CORPORATION

GILMORE WIRE ROPE DIVISION

PITTSBURGH 30, PENNSYLVANIA

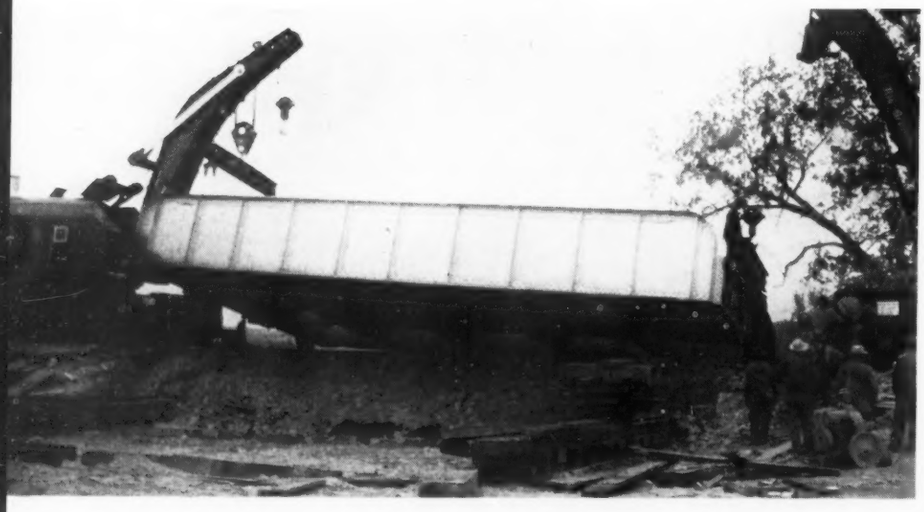
J&L *Precisionbilt* PERMASET PRE-FORMED WIRE ROPE

Railroad Span Skidded to New Site



BIG WRECKING CRANES lift 100-ton railroad span to new seats as final move in relocation. From old site, structure was slid 125 ft. along greased rails of double-track main line.

FALSEWORK BENTS carry main line at new bridge site while abutments are built and span is brought up from present position 125 ft. down tracks. Bridge will be placed on temporary cribbing, shown here, while falsework is removed.



AT ORIGINAL SITE, wreckers lift 48-ft. double-track span on to greased rails of main line for skid to new location. Old stream channel was filled in and track replaced while bridge rested on temporary seats in foreground.

IN A FAST MOVE, without interruption to traffic, crews of the Denver & Rio Grande Western Railroad Co. skidded a 48-ft. double-track through plate girder bridge 125 ft. to new location on the main line near Pueblo, Colo. Relocation of the 100-ton structure was made necessary by a channel change in a small creek which it spanned.

At the new bridge site, 125 ft. down the tracks from the old, the double-track main line was carried on falsework bents of timber piling while the channel was cut and concrete abutments poured. After the stream was shifted, the old waterway was filled to the underside of the bridge girders, and two wrecking cranes lifted the span sideways on to temporary bridge seat extensions. Previously stockpiled fill was bulldozed into the opening left by the bridge, and ballast and tracks were replaced.

Slid Along Main Line

The cranes then set the span on the double-track and skidded it intact to the new site where it was placed to one side on another set of temporary bridge seats. When the main line falsework was removed, the wreckers lifted the bridge to its new permanent position.

The relocation was made in three jumps to take advantage of traffic-free intervals on the main line, and no trains were delayed. Two moves, from the original position to the temporary seats alongside, and from the second set of seats to the final position, each required 4¾ hr. The structure was skidded along the main line in 2 hr.

The work was done by Rio Grande forces under the direction of Bill Jacobsen, Pueblo division engineer, and E. T. Richie, superintendent of structures.

SPRAY Protective Coatings Direct from Original Drums

Spraying the superstructure of a bridge with paint sprayed direct from the original drum with Alemite VERSATAL equipment.

FASTER . . . EASIER . . . AND AT LOWER COST!

With Alemite VERSATAL Equipment you can pump most any material that seeks its own level in the drum. The powerful VERSATAL Pump will pump materials hundreds of feet horizontally or vertically. VERSATAL Pumps handle Coal Tars, Asphalt Cut-backs and Emulsions, Red Lead, Anti-corrosive materials, Waterproofing materials, Concrete Curing Compounds, some abrasive materials, Sound Deadening materials and many others.

Using VERSATAL equipment to spray underground storage tanks with Bitumastic No. 50.

A Complete VERSATAL set-up:

- VERSATAL pump.
- Hose reel.
- 160′ material hose.
- 160′ air hose.
- Air compressor.
- Pole gun or spray gun.

Here's what contractors report:

1. BOSTON, MASS. . . . Spraying concrete primer with VERSATAL method, two men increased output from 40 squares to 358 squares per 9 hour day.

2. HOUSTON, TEX. . . . For coating underside domes of gas storage tanks, former hand method required 3 shifts for 18 days . . . VERSATAL method required 3 shifts for 6 days.

3. SAN FRANCISCO, CAL. . . . For prime coating walls of 2,000,000 gal. reservoir, two men with VERSATAL equipment completed job in 4 hours' spraying time.

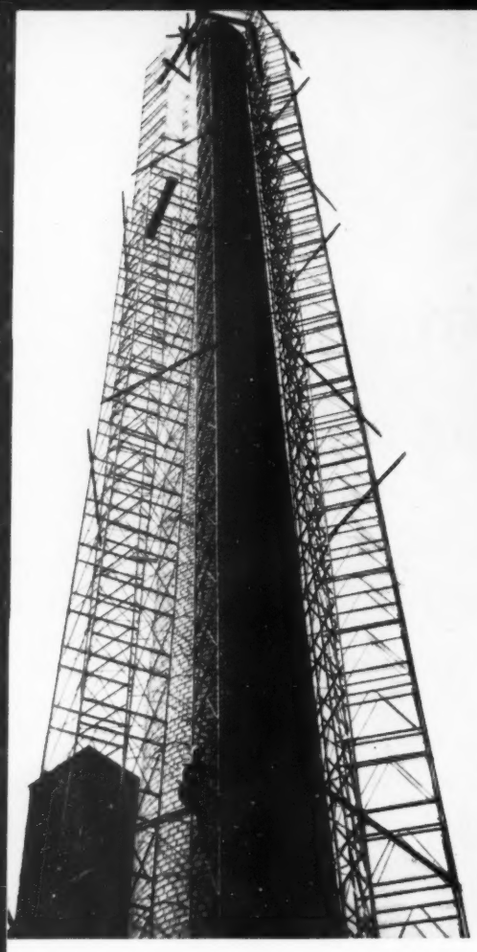
Write today for complete details and illustrated catalog. Alemite, 1840 Diversey Parkway, Chicago 14, Illinois.

ALEMITE Versatal EQUIPMENT

STEWART WARNER

JOB oddities

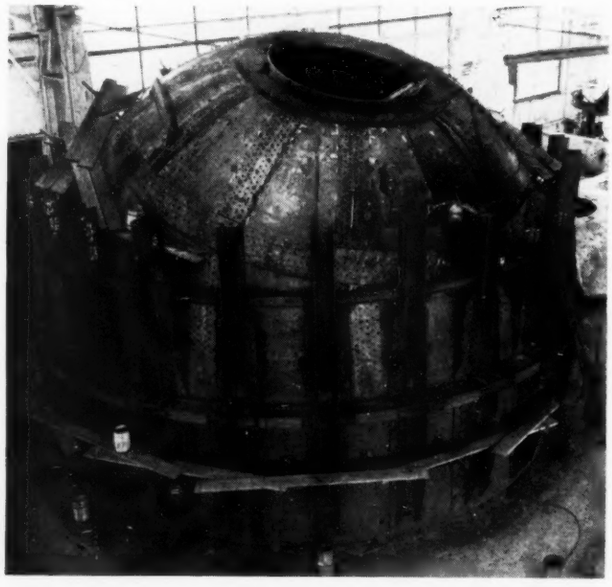
BUCKETFUL OF BEAUTY in 1947 Helldorado parade at Las Vegas, Nev. Bedecked Lorain truck crane offering Miss Donna Holberg of Boulder City to parade watchers was float entry of Nevada State Highway Department. Photo Wm. S. Russell, U.S.B.R.



← BRICK BY BRICK, tall stack at Detroit flour mill is demolished by SAM DRESSELL, veteran steeplejack and helper, who figure it will take a month to remove estimated 80,000 bricks in structure. Stack cannot be toppled for quick clearing because of danger to surrounding buildings and utilities. Wide World Photo

MATERIAL SHORTAGES didn't bother Ben C. Gerwick Co. when they built this compressor house at their Petaluma, Calif., pile casting yard, for they used cutoffs from concrete piles for walls. Looks earthquake proof, too.

PULLING A HOUSE OUT OF THE AIR (below), British builder converts Horsa glider, of type used by airborne troops in war, into three-room home at Southbourn, England. Acme Photo



NOT A BESSEMER CONVERTER, but bottom end of one of 40-ft. dia. surge tanks 148 ft. high being fabricated upside down in Chicago shops of Chicago Bridge & Iron Co. for installation at Ft. Peck Dam in Montana by Fegles Construction Co., Minneapolis, contractor on new powerhouse. Col. Edward H. Walter is U. S. District Engineer in charge at Ft. Peck. Surge tanks are being fabricated under eagle eye of Col. Wendell P. Trower, District Engineer at Chicago.

Why is Duraplastic Cement being specified more and more

By

Architects, engineers, contractors, dealers, ready-mix operators and concrete products makers

For

Paving, sidewalks, foundations, floors and walls—plaster, stucco, pump-crete, gunite and slip-form work—concrete block, pipe, drain-tile and other products

?

Here are 5 Quick Answers:

1. Complies with ASTM and Federal Specifications. Provides the proper amount of entrained air needed for satisfactory field performance.

2. No extra cost. Sells at the same price as regular cement. Calls for no additional materials.

3. Better concrete. Makes concrete more workable, more plastic and more uniform.

4. More durable concrete. Fortifies the concrete against freezing and thawing weather. Renders paving concrete highly resistant to scaling action of deicing salts.

5. Makes better concrete block. Reduces breakage, improves appearance, lowers water absorption and generally increases strength.

Send for further information. Write Universal Atlas Cement Company, (United States Steel Corporation Subsidiary), Chrysler Building, New York 17, N. Y.

OFFICES:

Albany, Birmingham, Boston, Chicago, Cleveland, Dayton, Des Moines, Duluth, Kansas City, Minneapolis, New York, Philadelphia, Pittsburgh, St. Louis, Waco.

CM-D-51

ATLAS DURAPLASTIC

TRADE MARK REG. U. A. C. CO.

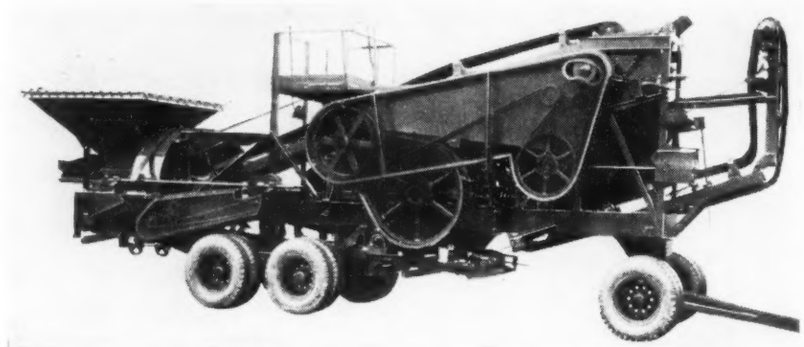
AIR-ENTRAINING PORTLAND CEMENT

MAKES BETTER CONCRETE AT NO EXTRA COST

"THE THEATRE GUILD ON THE AIR"—*Sponsored by U. S. Steel—Sunday Evenings—ABC Network*

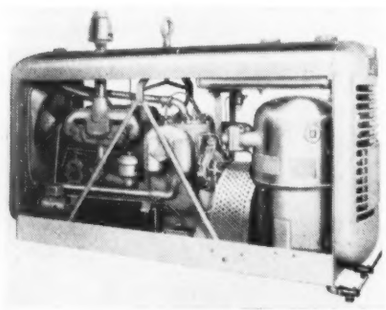
CONSTRUCTION EQUIPMENT NEWS

AUGUST 1947 REVIEW
of Construction Machinery and Materials

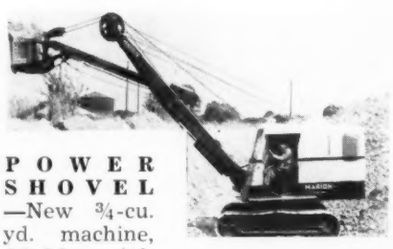


PORTABLE GRAVEL PLANT — High aggregate production is claimed for new 34-S portable gravel plant. Simplified in design and readily moved, 34-S is recommended for quick, short job hops where material is required in hurry. Mounted on six sets of dual 9:00x20 pneumatic tires, plant meets state highway load limits for weight and dimensions. Total weight, less power unit, is approximately 40,900 lb. It has travel length of 41 ft. and height of 12 ft 9 in. Unit has 7-ft. charging hopper with mechanized feeder, 1024 jaw crusher, 24x16-in. roll crusher, and 3x8-ft., 2½-deck vibrating screen. Plant itself requires only one operator. — **Pioneer Engineering Works, Minneapolis, Minn.**

COMPRESSOR — New Airmaster compressor, known as 105 utility, weighing 1,700 lb., has been specifically designed for either back of cab or on platform of utility trucks. Floor area required is only 82x25 in. Engine is Le Roi D226 featuring replaceable cylinder sleeves, precision bearings, overhead valves, pressure lubrication and magneto ignition.

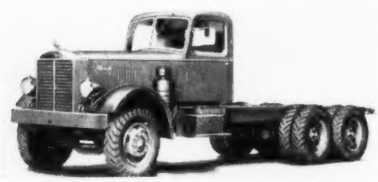


Liquid cooled compressor is built integrally into engine block. It is regulated by Le Roi patented Econotrol which governs compressor capacity automatically according to demand for air. Lifting bail, 6-v. electric starting system, and electric hour-meter on centralized control panel are supplied as standard equipment. **—Le Roi Co., 1706 S. 68th St., Milwaukee 14, Wis.**



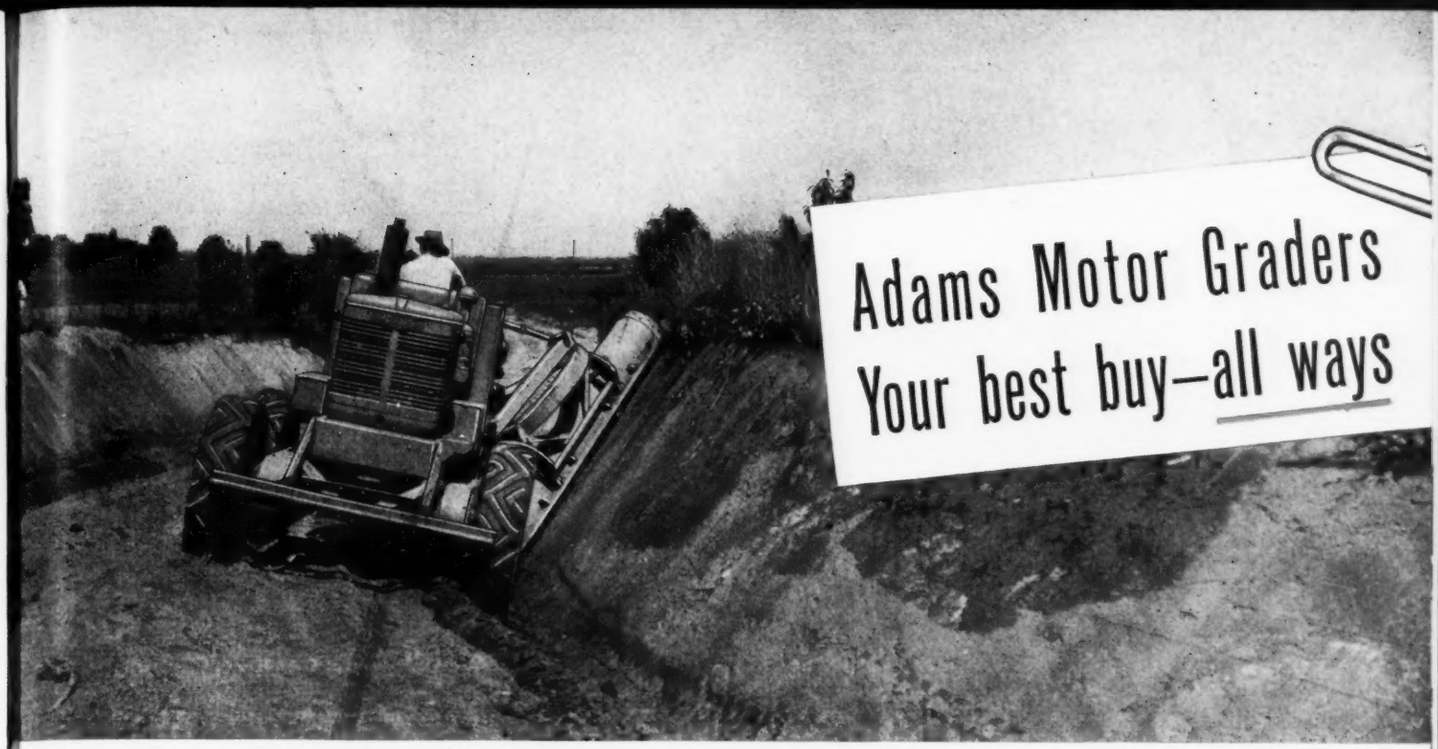
POWER SHOVEL —New ¾-cu. yd. machine, 33-M with various front-end combinations is shovel, dragline, clamshell, crane and backhoe. Features include Marion air control, greatly simplified machinery deck with only two shafts across it, simple changeovers for front-end equipment, use of 22 ball and roller bearings. Only 12 gears are used in entire machine. Conversion of front end does not require any changes of drum lagging, sprockets, or levers. Same drums are used on all combinations. Shovel boom also serves as boom for backhoe. Crane boom point is adaptable without change for crane, clamshell, dragline and pile driver service. Crawler pads and rollers are shielded from dirt. Lower frame design makes use of both castings and welded plates. Rig has dual crowd and independent high-speed boom hoist.—**Marion Power Shovel Co., Marion, Ohio.**

SIX-WHEEL TRUCKS AND TRACTORS—Model LTSW, in truck or tractor types, for express highway service, can handle huge loads either alone or in combination with semi- or full-trailers. Model LTSW-L is modified to meet demands of off-highway duty for logging and similar operations. Standard power source is EN 707A engine, 196 b. hp., latest of Thermodyne series, but Hall-Scott

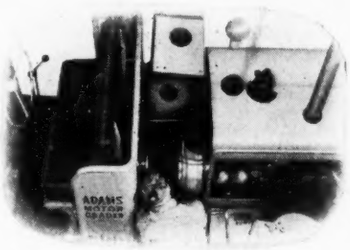


290 hp. engine is available. Transmission is TRD 15 Duplex, affording ten useful forward speeds. Mack exclusive, heavy-duty balanced bogie eliminates wheel-flight, tire-scuffing and consequent power loss. Mack power divider serves as third or inter-axle differential. Dual reduction axles employ Tetrapoid spur gear design for reduction and Orthopoid bevel pinion gears for change of direction.—**Mack Trucks, Inc., Empire State Bldg., New York, N. Y.**

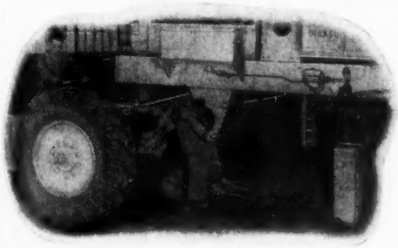
LIGHTWEIGHT ROCK DRILL—J30 Jackhamer is designed for drilling medium to hard rock. Drilling foundation holes in concrete, cutting hitches, block holing, trimming and cutting trolley hanger holes are few of jobs it will easily perform. Three-in-one backhead allows machine to be easily converted to any one of three types, wet, dry, or blower type. In addition, it has new sealed throttle valve, stronger rifle bar, two-piece chuck and long-wearing piston.—**Ingersoll-Rand, 11 Broadway, New York 4, N. Y.**



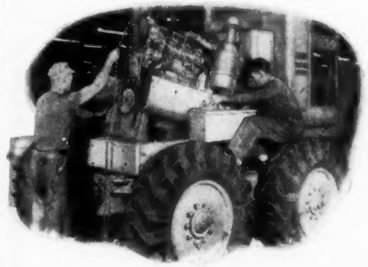
Adams Motor Graders
Your best buy—all ways



1. Clutch easy to reach and service



2. Transmission readily accessible



3. Engine easily removed

Faster to service—
Easier to maintain

● Thoughtful engineering pays off in many ways to make Adams Motor Graders *your best buy—all ways.*

For example, Adams Motor Graders are engineered for fast, efficient, economical servicing—through and through. Note in the accompanying pictures how even the usually hard-to-reach assemblies are readily accessible in Adams Motor Graders:

1. Clutch is conveniently located between cab and engine—with plenty of room for servicing without disturbing the engine. Entire clutch assembly can be completely overhauled, *by one man,* in about 4 hours.
2. Transmission and lower half of engine are reached merely by disconnecting and backing out the final drive assembly. This is an unusually fast and easy operation.
3. Engine is mounted so it can be quickly removed from frame, when so desired. This feature frequently saves many in-the-shop hours.

Yes, Adams Motor Graders are designed and built to spend fewer hours in the shop—*more hours on the job . . .* to do more work—*better, faster, cheaper.* Ask your local Adams dealer for complete information.

J. D. ADAMS MANUFACTURING CO. • INDIANAPOLIS, INDIANA

Adams

MOTOR GRADERS • LEANING WHEEL GRADERS • ELEVATING GRADERS

When Schedules Are Threatened By Water...

GOODALL "SSS" SUCTION HOSE

Built for Super-Severe Service . . . to get the *most* out of your pumps when water threatens to bag down the job and cut down your profit.

"SSS" is suction hose at its best . . . made to stand up when the going gets rough, and to stay on the job till the pumps have done their duty. Won't kink, buckle or collapse. A tough red waterproof cover of heavy duck withstands severe surface wear, to guard against internal damage. Smooth bore rubber tube is highly resistant to the cutting action of sand and gravel. Available in sizes up to 6".

"SSS" Pump Suction Hose is a Goodall "Standard of Quality" Product . . . your assurance of long, reliable service under all conditions. Easily identified by the "SSS" label and the brown spiral stripe.

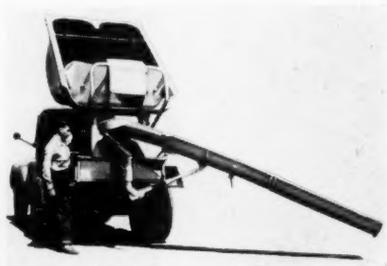
Contact Our Nearest Branch for Complete Details and Prices.

GOODALL RUBBER CO., INC.

THE GOODALL-WHITEHEAD COMPANIES

Philadelphia • Trenton • New York • Boston • Pittsburgh • Chicago • St. Paul • Los Angeles San Francisco • Seattle • Salt Lake City • Houston • Factory: Trenton, N. J. • Est. 1870

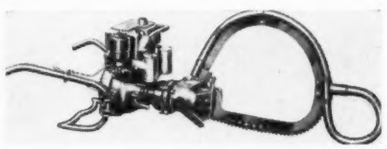
CONCRETE TRUCK — Model 2C Dumpcrete has 2-yd. capacity, discharge height increased to over 5 ft., swing-away chute and steel plate running boards. Chute assembly can be quickly and easily swung away to either side in order to dump sand,



gravel or concrete without using chute. Also in production is new Dumpcrete with 3-cu. yd. rated concrete capacity and 5-cu. yd. water level capacity, with same features as 2-yd. size. Four-yard body is also being produced.—**Maxon Construction Co., Inc., 131 N. Ludlow St., Dayton 2, Ohio.**

PORTABLE WELDER — New self-powered arc welder, P&H Model WN-200, available as stationary or trailer unit, is N.E.M.A. rated at 200 amperes, but has welding service range of from 30 to 260 amperes. Both types have engine and welder mounted on all-welded frame of sturdy steel tubing and heavy angle iron. Skid model is ideal for carrying on trucks. Large lifting eye for crane handling is provided. Trailer model has been engineered especially for use in field. Carried on running gear of standard track width, trailer welder has standard size pneumatic tires as regular equipment. — **Harnischfeger Corp., Milwaukee, Wis.**

POWER SAWS—Model 7 gasoline engine one- or two-man chain saw for felling and bucking big timber up to 12 ft. in diameter weighs only 75 lb. for 24-in. model. Available in 18-in. to 12-ft. capacities. Models 30 and 36 one-man circular saws with 30-in. blade will cut any 22-in.-dia.



tree. Entire unit weighs only 200 lb. Circular blade can be indexed for notching, bucking and limbing cuts from operating handle, without touching blade. Available in 30- and 36-in. capacities. Bow chain saw (illustrated) is available in 18-in. capacity. Cutting unit can be swiveled to any angle for felling or bucking cuts.—**Mall Tool Co., 7757 S. Chicago Ave., Chicago 19, Ill.**

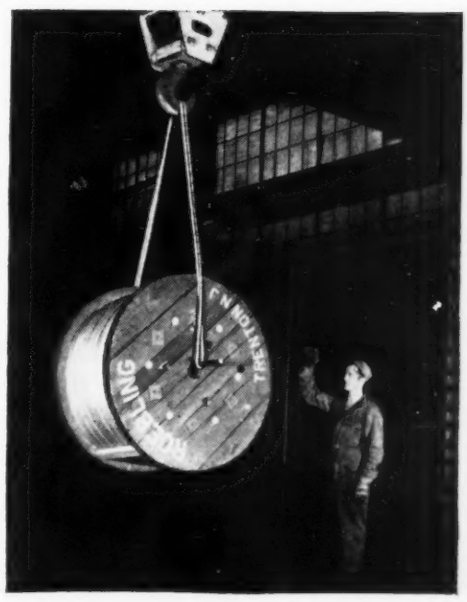
CONFIDENCE...how much is it worth?

EVEN IN THIS ATOMIC ERA, what engineer wouldn't be awed at the possibility of building a bridge of his own design across the hazardous Niagara gorge? Yet John A. Roebling was commissioned to do just that *98 years ago* . . . ten years before this country's first oil well was drilled!

What an outstanding example of confidence. The confidence of a man in his own work. The confidence of people in one man and his abilities . . .

Today this same confidence, that has been nurtured through the years, is still alive in the company founded by this man and his sons. On this same foundation was built a business that has always believed that confidence must be created and grows through completely honest business transactions with each and every one of its customers.

Little wonder, then, that your confidence in John A. Roebling's Sons Company is guarded so carefully.



Why Contractors Specify "Blue Center" Steel Wire Rope

BASICALLY, there is but *one* reason: a firm confidence in the Roebling name and reputation, in the Roebling organization and representatives, in the quality of the wire rope itself.

Of course, there are other reasons, too. You have the assurance that the complete range of constructions and sizes in "Blue Center" Steel Wire Rope includes the *right* rope for your installation. And whether it's a preformed or non-preformed type, you can trust it to give you most service for the money.

Let a Roebling Field Engineer advise you on unusual problems of rope selection, operation and maintenance. His knowledge is based on his own experience *plus* field studies, research and thousands of service records studied by Roebling's Engineering Department. Call him at our nearest branch office.

JOHN A. ROEBLING'S SONS COMPANY
TRENTON 2, NEW JERSEY
Branches and Warehouses in Principal Cities

Manufacturers of Wire Rope and Strand • Fittings • Slings • Screen, Hardware and Industrial Wire Cloth • Aerial Wire Rope Systems • Hard, Annealed or Tempered High and Low Carbon Fine and Specialty Wire, Flat Wire, Cold Rolled Strip and Cold Rolled Spring Steel • Ski Lifts • Electrical Wire and Cable • Suspension Bridges and Cables • Aircord, Aircord Terminals and Air Controls • Lawn Mowers

ROEBLING

A CENTURY OF CONFIDENCE

JR ROEBLING

ANNOUNCING THE NEW GULFLUBE H.D.

UP-TO-THE-MINUTE RESEARCH BRINGS YOU AN IMPROVED DETERGENT-TYPE OIL FOR HEAVY-DUTY SERVICE

Combines a tough lubricating film...

This film provides better lubrication for your engines—cuts maintenance costs—helps improve performance.

With full detergency...

In automotive Diesel engines: Gulflube H.D.'s full detergency means you avoid high temperature sludge, piston varnish, lacquer, and stuck rings. You get cleaner engines, with a minimum of fuel soot deposits.

In gasoline engines (in extra heavy-duty service): This full detergency means you avoid deposits and ring sticking due to oil oxidation—and other harmful deposits not caused by oxidation of heavy ends of unburned fuel which may pass the rings and contaminate the lubricating oil in the crankcase.

Holds idling pressures...

High Viscosity Index of Gulflube H.D. insures high pressure gauge readings when your motor is idling.

Cuts down drag...

You get a minimum of drag and frictional resistance when starting in cold weather.

Cuts oil consumption...

Your rings stay clean with Gulflube H.D., and that means you don't lose oil by pumping. Gulflube H.D. will not foam nor corrode alloy bearings.

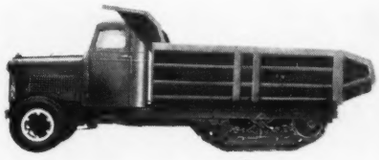
Ask any Gulf Representative to tell you more about Gulf's new detergent motor oil, Gulflube H.D. There's no obligation, of course.

GULFLUBE H.D.

GULF

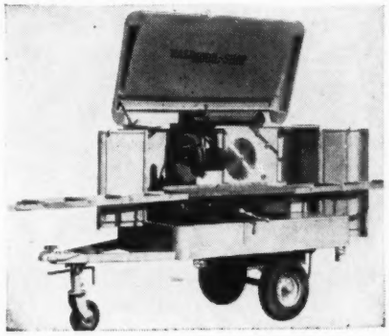
Gulf's New Detergent Motor Oil For Diesel Engines and Gasoline Engines in Extra Heavy-Duty Service.

HALF-TRACK UNIT—New Model D-15 incorporates full contour traction for maximum engaged track area and increased stability, new



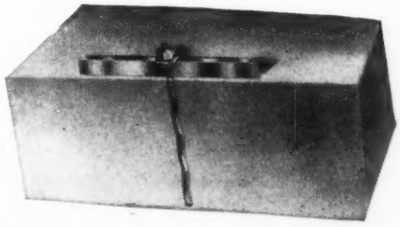
long traction unit for greater load capacity and track area, and higher speeds. It is either gasoline or diesel powered.—**Linn Mfg. Corp., 250 W. 57th St., New York 19, N. Y.**

PORTABLE SHOP — House "prefabricating plant" on wheels is first portable shop of its kind. Radial arm type wood-working saw is mounted on wheels; it can be attached to any car or truck and taken to site for on-the-job cutting. Mill-work of

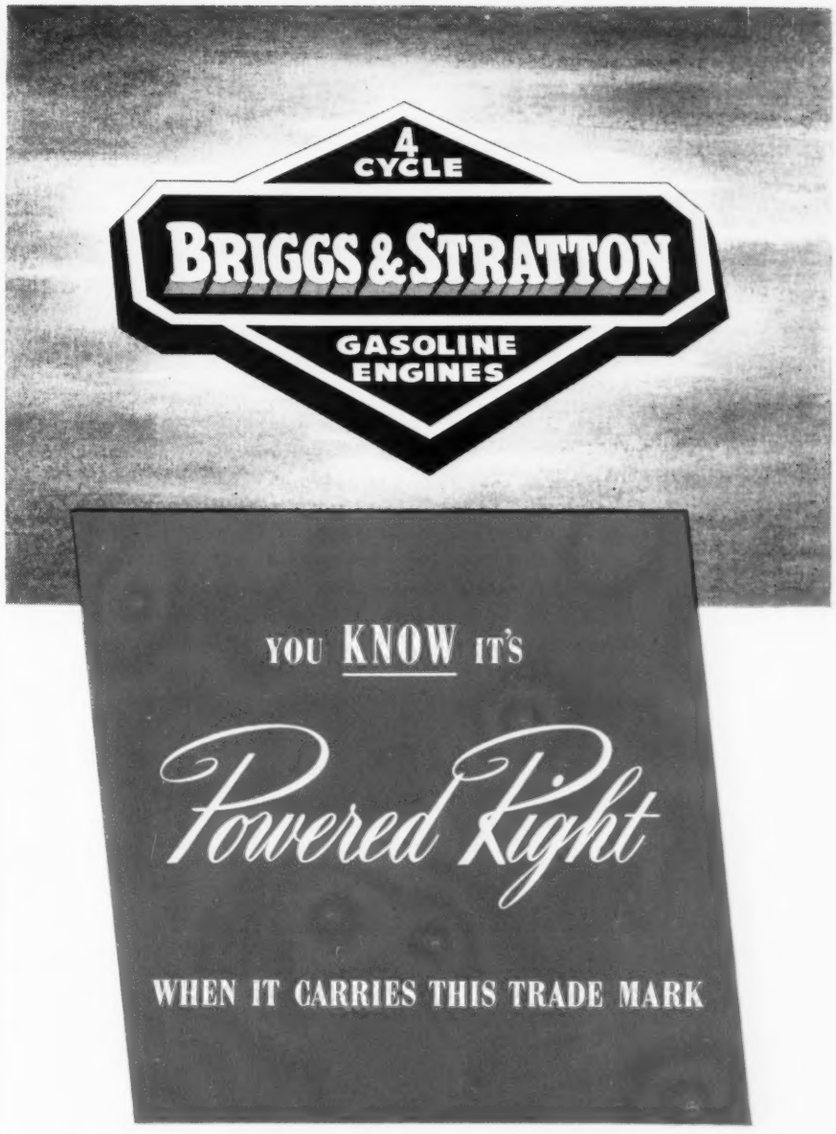


many types can be done inside structure as shop rolls through any standard door. Deluxe model is rugged, weatherproof storage place for tools, hardware, etc.; standard model has heavy duty, tarpaulin (zipper-closed) cover.—**Equipment Engineering Co., St. Charles, Ill.**

FORM ALIGNER — New device aligns bottom of steel or wood forms. Anchor may be set at any point near center of footing at intervals of 3 or 4 ft. Parallel gage bars can be placed any time prior to setting of

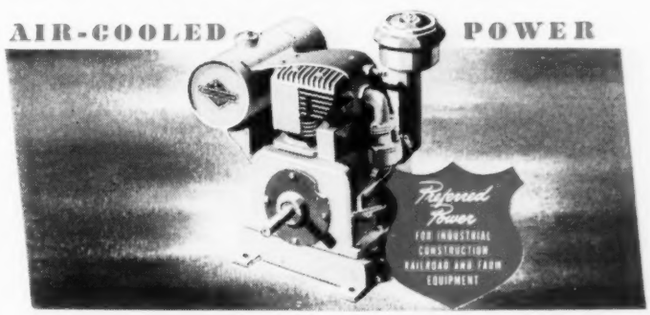


forms and adjusted to chalk line for spacing of forms. It also provides some anchorage of wall to footing. These forms are inexpensive and simple to install. — **Williams Form Engineering Corp., Box 925, Madison Square Station, Grand Rapids 7, Mich.**



The ever-increasing *preference* of users and dealers for equipment powered by engines bearing this world-famous trade mark, is a tribute to the record for *dependable operation* made by *more than 3 million* Briggs & Stratton 4-cycle air-cooled engines. Because they incorporate the constant engineering advancements . . . improved methods of precision manufacture . . . technical knowledge and experience of over 27 years of *continuous production*—today's Briggs & Stratton engines have no equal in value and performance.

BRIGGS & STRATTON CORPORATION, MILWAUKEE 1, WIS., U. S. A.



CONCRETE VIBRATION

is Our Meat!

If you are looking for the best solution to any specific concrete vibration problem, or on the other hand, you simply want the best vibrator your money will buy, see the nearest JACKSON Distributor or drop us a line. Concrete Vibration is our meat!

For over 25 years we have specialized in the development and manufacture of the most efficient and reliable concrete vibrators for each and every type of concrete construction. And the record of JACKSON equipment in the field clearly demonstrates that that goal has been fully attained. The name "JACKSON" on any vibrator is complete assurance of thorough satisfaction.

DAMS MASS CONSTRUCTION

GENERAL CONSTRUCTION

AIRPORTS HIGHWAYS

The FS-7A ELECTRIC (READY FOR IMMEDIATE DELIVERY)

Ideal on many types of construction. Built around the lightest, yet most powerful motor we have ever used on equipment of this character. Easy to handle or skid. Takes any of our standard heads up to 2⅜" x 18½" with flexible shafting in 24" to 14' lengths. Delivers up to 10,000 V.P.M. on AC or DC 110-120 Volt. Does many jobs formerly done only with larger machines.

Left: The FS-7A with reduction attachment to provide the most desirable shaft speed for wet or dry rubbing or grinding of concrete.

PIPE MANUFACTURE

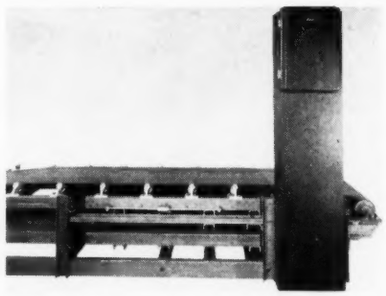
TUNNELS HARD-TO-GET-AT PLACES

FORM VIBRATING

JACKSON INTERNAL—EXTERNAL ELECTRIC-FLEXIBLE SHAFT-HYDRAULIC Concrete VIBRATORS

ELECTRIC TAMPER & EQUIPMENT CO.
LUDINGTON MICHIGAN

DRY MATERIAL FLOW METER— Conveyoflow meter for continuous weighing of dry materials on conveyor belts of usual knife-edge-beam principle for metering flow of dry materials by weight. Scales may be used to proportion and control, as well as weigh, feed of one or more dry materials and to control flow of liquids in proportion to flow of dry



materials. Weighing section of meter is supported at one end by self-aligning ball bearing pillow blocks and at other end floats on diaphragm which transmits load changes hydraulically to weighing mechanism. Cyclometer type totalizer reads directly in any unit desired and is non-cyclical in operation, employing disk-and-wheel integrating principle, and is automatically corrected by return belt weighing for any speed or weight variations in belt.—**Builders-Providence, Inc., Providence, R. I.**

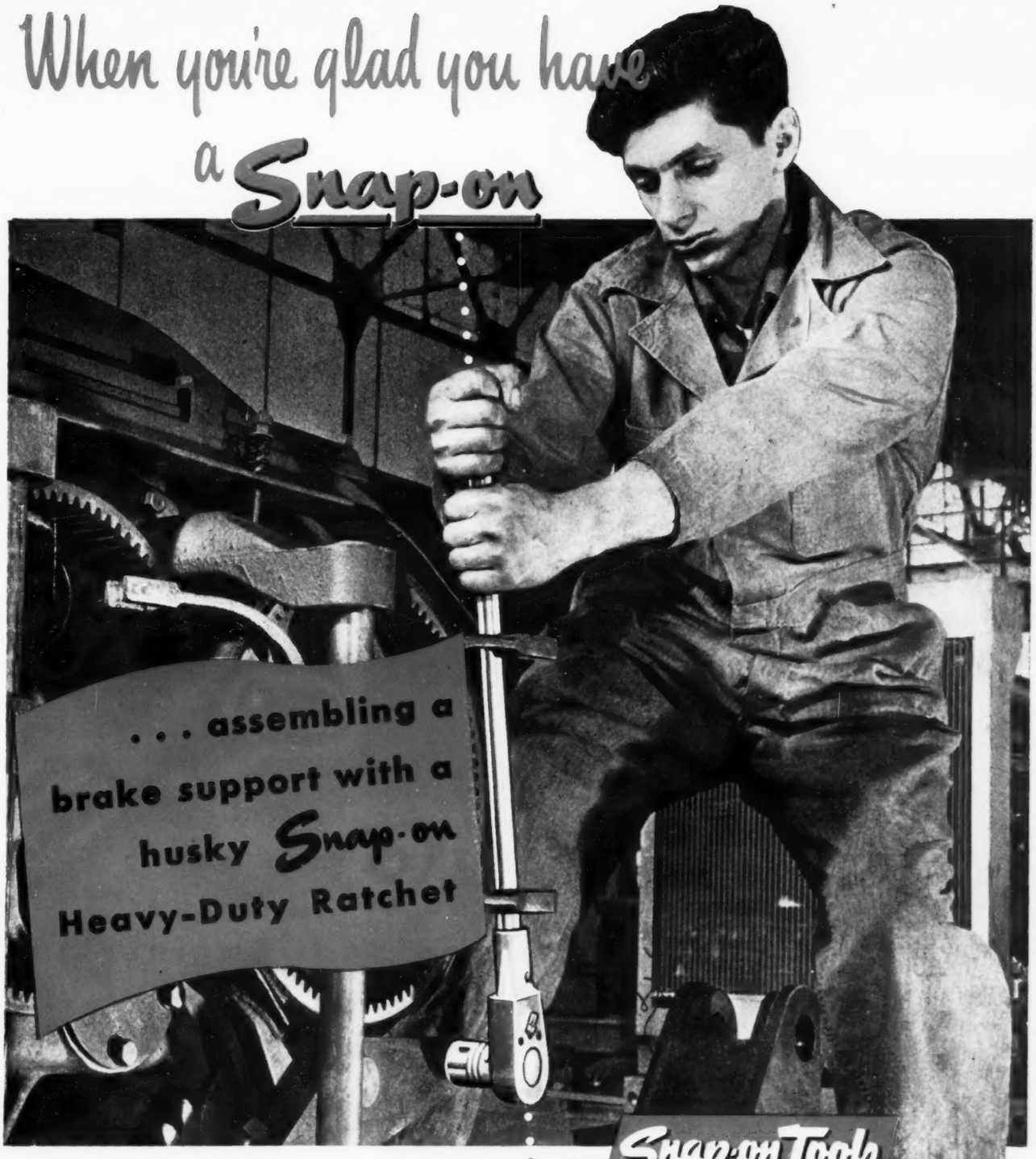
McKiernan-Terry

PILE HAMMERS

For more than fifty years the choice of engineers and contractors for difficult pile driving jobs in every part of the world. Available in a standardized line of 10 double-acting hammers, 5 single-acting hammers and 2 double-acting extractors . . . *Write for free Bulletins #55 and #57.*

McKIERNAN-TERRY CORP.
Manufacturing Engineers
14 Park Row New York 17 N. Y.

When you're glad you have a Snap-on



For fast assembly and maintenance work, where large bolts must be tightened in hard-to-reach places, Snap-on Heavy-Duty Socket Wrenches and Handles combine speed and safety with powerful leverage. Features include rapid interchangeability of units — safe unit locking devices . . . and a wide range of sizes.

Actual working performance has proved their value in stepping-up production and cutting "down time" to a minimum during maintenance.

Snap-on tools are available from any one of 40 direct factory branches located in key industrial centers.

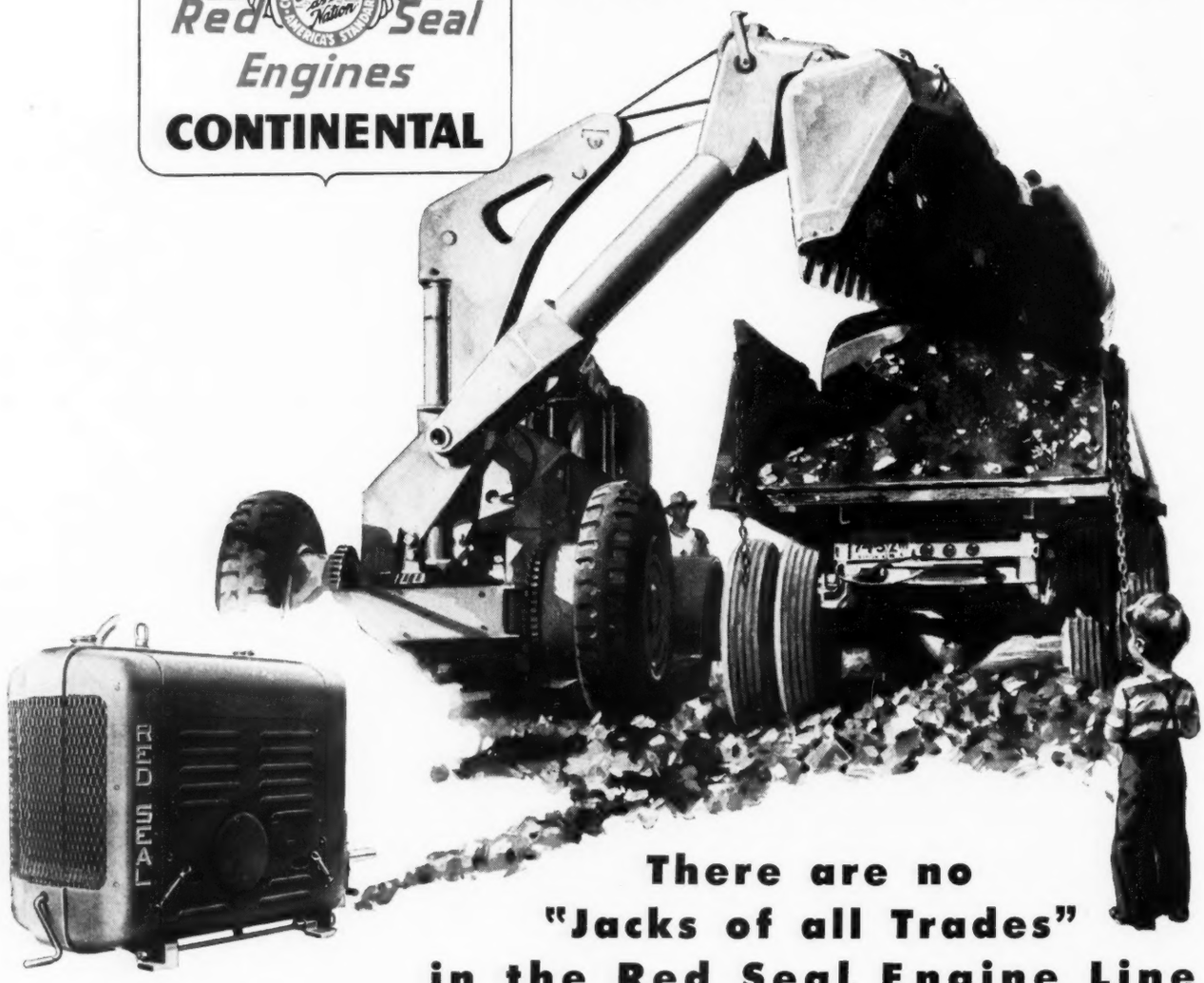
SNAP-ON TOOLS CORPORATION

8084-H 28th AVENUE KENOSHA, WISCONSIN

International Division: Kenosha, Wisconsin, U. S. A.

POWER BY
Red Seal
Engines
CONTINENTAL

BUILT FOR THE JOB!



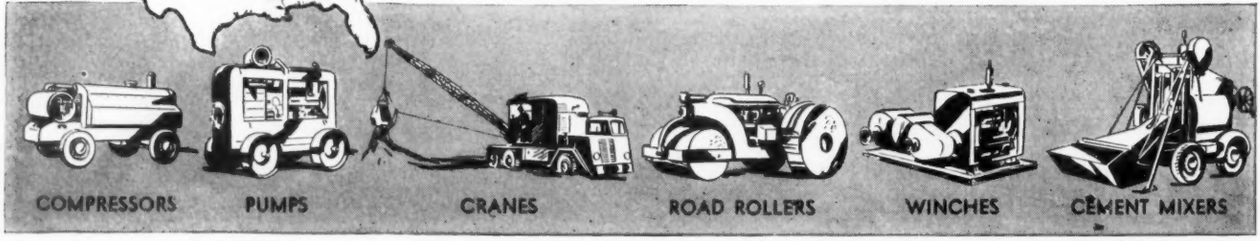
The Red Seal F-226 gasoline engine is on the job at hundreds of construction projects. It develops 55 h.p. Write for data.

There are no "Jacks of all Trades" in the Red Seal Engine Line

All through the building industry, Continental Red Seal engines are a preferred source of power. The reason is ***performance,*** of course — performance assured by the fact that each of the several models available at any given horsepower level is engineered and built to excel at one specific job. No matter what the requirements of the use you have in mind, there's a Red Seal engine to do it better, longer, at lower cost.

Continental Motors Corporation
MUSKEGON, MICHIGAN

45 YEARS' SPECIALIZED EXPERIENCE BUILDING ENGINES FOR TRANSPORTATION, INDUSTRY, AVIATION AND THE FARM



One Man moves 100 yards per hour with One INTERNATIONAL TD-18

This one-man, International tractor and scraper unit moves 100 yards of earth to the fill in an hour! It's on a big road-building job for a logging company in the mountains of northwest Washington.

The International TD-18 Diesel has the power to lug its matched scraper without assistance, even through this hardpan and gravel. It has the maneuverability and secure footing to handle the load on steep grades as well as on the fill.

A lot of earth gets moved at minimum cost for labor, fuel and maintenance under these circumstances. That's why the demand for International Crawlers and matched earth-moving equipment becomes greater and greater every month.

Ask your International Industrial Power Distributor for the interesting facts about this and other tractors in the complete International line. Let him help select the power and equipment you require.

Industrial Power Division

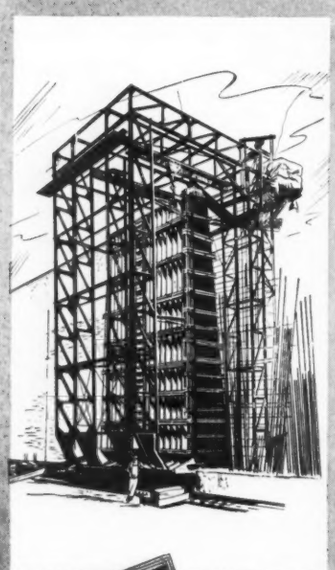
INTERNATIONAL HARVESTER COMPANY
180 North Michigan Avenue Chicago 1, Illinois

INTERNATIONAL *POWER*

CRAWLER AND WHEEL TRACTORS · DIESEL ENGINES · POWER UNITS

On large and small projects . . . they save with

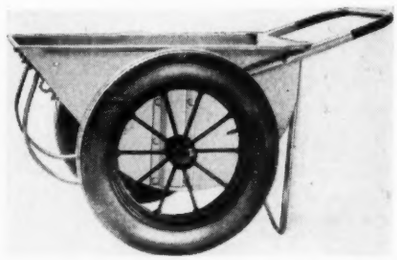
BLAW-KNOX STEEL FORMS



SEND FOR Bulletin No. 2035 for special design suggestions using Blaw-Knox Steel Forms.

BLAW-KNOX DIVISION
OF BLAW-KNOX COMPANY
2086 Farmers Bank Bldg., Pittsburgh 22, Pa.
Birmingham—Chicago—New York—Philadelphia—Washington

CONCRETE BUGGY—New concrete buggy rocker design makes for easy dumping and eliminates all kick-back when it is tipped over. Buggy, with capacity of 6½ cu. ft., is



equipped with roller bearings, two- or four-ply pneumatic tires, and 10-spoke steel wheels. Unit is of nesting type with full-welded seams and is equipped with "towing eye."—**Muller Machinery Co., Inc., Metuchen, N. J.**

LIGHTWEIGHT JACK — Total weight of the Buda ball-bearing journal jack (Model 2510-A) is only 28 lb. Capacity is 25 tons; height closed 10 in., and rise 5½ in. Ball-bearing action of aluminum-alloy jack assures smooth raising and lowering and positive control of load. Jack has aluminum-alloy shell.—**The Buda Co., Harvey, Ill.**

The ultimate in pneumatic placing of concrete! Simpler . . . faster . . . more economical! Model 200 illustrated uses separate compressor—has 4-speed transmission 2 other models smaller and larger. Write for new bulletin.

CONSTRUCTION MACHINERY COMPANIES
WATERLOO, IOWA

Makers of Mixers . . . Batching and Placing Equipment . . . Carts . . . Hoists . . . Pumps, Power Saws . . . Electric Generators . . . Guns!

GET TO THE POINT

WITH AMSCO-NAGLE INDUSTRIAL PUMPS

AMSCO-NAGLE PUMPS GIVE GREATER SERVICE

Amsco design covers the two points that really determine the value of an industrial pump: (1) The service it will give and (2) The ease with which it can be maintained . . . any pump, worthy of the name, will handle the actual pumping.

Every feature of Amsco-Nagle Pumps is designed to resist abrasion and impact. Wide impeller clearances allow free passage of debris-laden liquids. Casing, impeller, and end plate are only parts contacting material being pumped—bearing housing is completely sealed off from water end. Anti-friction bearings are arranged to handle heavy loads. An example of Amsco's striving for the utmost in durability is the use of manganese steel, "the toughest steel known", for shells, impellers, sideplates and liners.

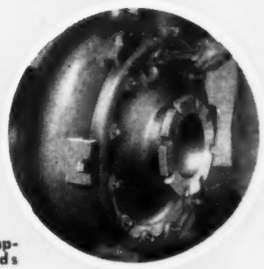


Figure 1—Clamping ring holds end plate.

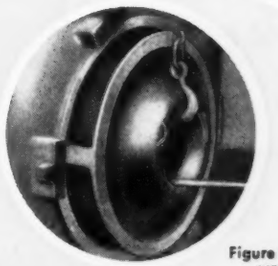


Figure 2—Impeller screws off.

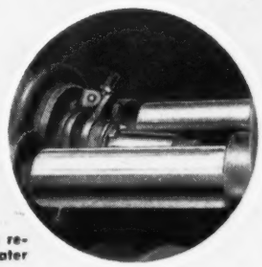


Figure 3—Easy removal of water end

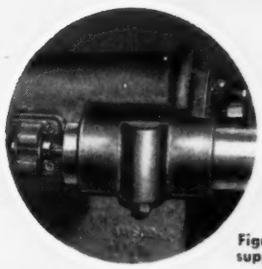


Figure 4—Tubular supports clamp in housing.

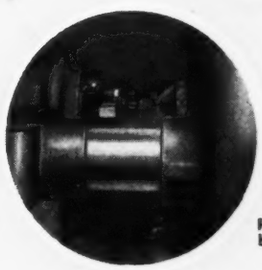
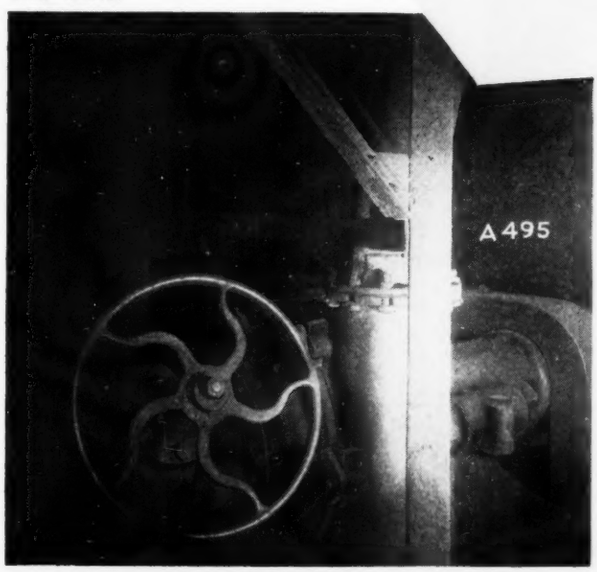


Figure 5—Accessible stuffing box.



AMSCO-NAGLE PUMPS ARE EASIER TO MAINTAIN

Water end parts subjected to wear can be adjusted or replaced easily and quickly. End plate comes off by simply removing clamping ring (clamping dogs on some models) — see Figure 1. Impeller screws off — see Figure 2. Or entire water end can be removed —see Figure 3. Tubes on casing clamp in bearing housing as shown in Figure 4— horizontal jack screw adjustment before tightening clamp bolts assures positive alignment of impeller in casing. Stuffing box readily accessible between tubes — see Figure 5.

Write for Bulletin describing these pumps.

Typical power plant installation of an Amsco-Nagle, 6", Type "T", Ash Handling Pump.

AMERICAN Brake Shoe COMPANY

AMERICAN MANGANESE STEEL DIVISION
CHICAGO HEIGHTS, ILL.

Foundries at Chicago Heights, Ill., New Castle, Del., Denver, Colo., Oakland, Calif., Los Angeles, Calif., St. Louis, Mo.
Offices in principal cities. In Canada: Joliette Steel Limited, Joliette, Que.

Your job can move faster with "VENTUBE"* ventilation

Where you're after peak efficiency on underground construction . . . specify Du Pont's flexible ventilating duct

Next time you've got a deadline to meet, speed up production with Du Pont "Ventube." Attach it to a blower and use it to pour large volumes of fresh air into working locations . . . sweep away dust and foul air . . . keep work moving. "Ventube" can be carried to the spot, set up, then quickly moved again . . . with minimum time loss.

"Ventube" is light, easily handled. It rolls up in a small bundle for storage or efficient handling. And it's simple to suspend, couple, and put into operation. One man can set up 100 feet of "Ventube" an hour . . . an assembly speed impossible with rigid conduit. Curved around corners, or under and over obstructions, "Ventube" needs few fittings. A wide range of lengths and diameters is available. And it has long life—is moderate in cost.

To draw out stale air and dust, use Du Pont Helical-type "Ventube" attached to an exhaust fan. Its tempered steel inner spring can be bent at any angle—even doubled back on itself—without appreciable loss of air flow. And Helical-type "Ventube" accordion-folds to one-fifth its length . . . has *all* the good qualities of blower-type "Ventube."

*"VENTUBE" *is Du Pont's registered trade mark for its flexible, synthetic-rubberized ventilating duct.*

DU PONT "VENTUBE"

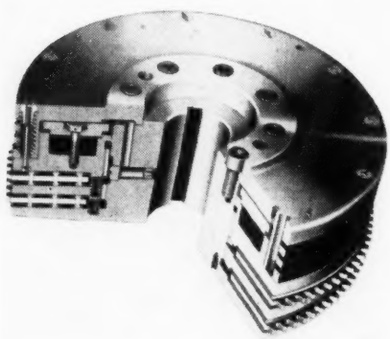
DU PONT REG U.S. PAT. OFF.

FOR LOWER PRODUCTION COSTS THROUGH BETTER VENTILATION

BETTER THINGS FOR BETTER LIVING . . . THROUGH CHEMISTRY

LEAD HOLDERS—Dixon Eldorado lead holders—No. 163 single-pointed and No. 164 double-pointed—are precision instruments for draftsman and engineer. Pencils are equipped with patented clutch mechanism, that will not wear down or harden. Grip diameter is same as regular drawing pencil, and fluting on grip keeps fingers from slipping. No. 163 is 6-in. tapered hexagon pencil, with movable lead indicator and aluminum tip. Double-pointed No. 164 permits use of two different degrees of hardness in one pencil and has two movable indicators for identifying lead degrees. Hexagonal in shape, pencil is 5⅞ in. long.—**The Joseph Dixon Crucible Co., Jersey City, N. J.**

AIR-ACTUATED CLUTCH—Model PH Clutch, available in 30, 36 and 42-in. sizes, supplements regular line of Model P air-actuated clutches and widens range for selection of unit to fit any need. Sizes of two



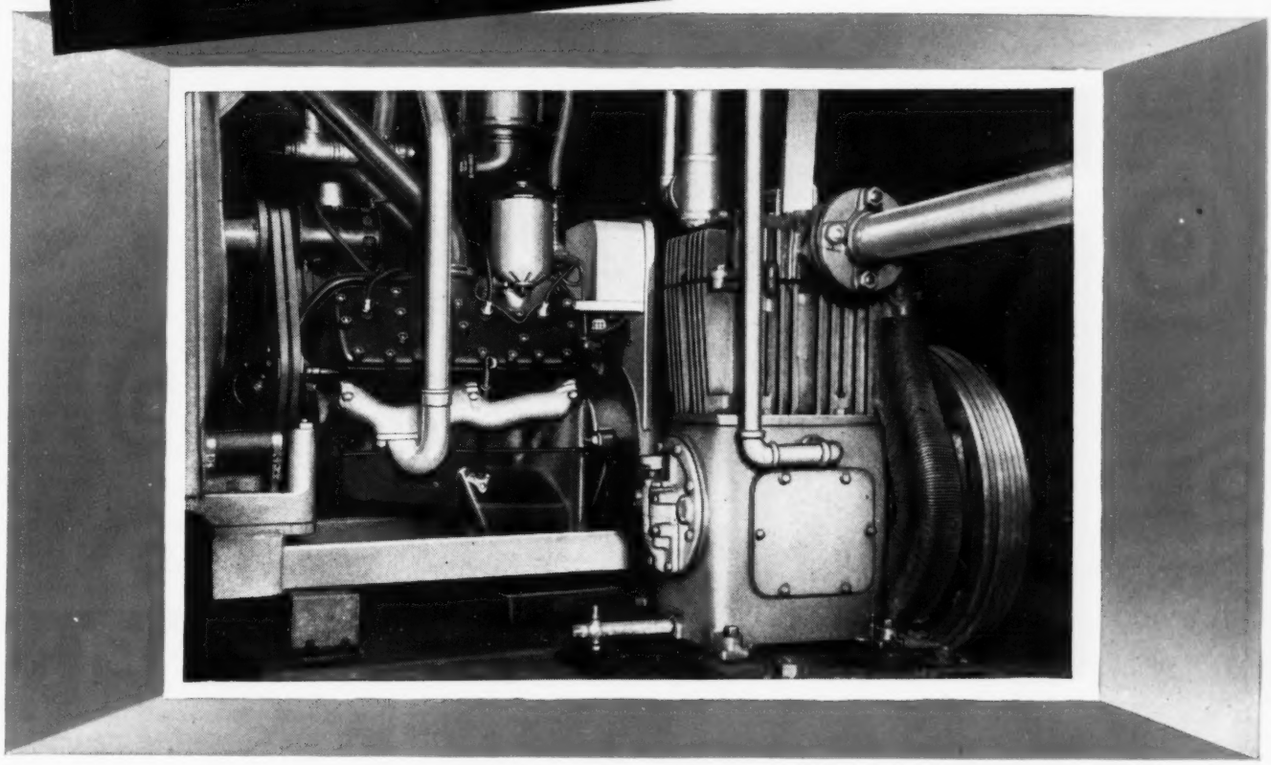
models now run from 14 to 42 in. with capacities from 75 hp. to 1,325 hp. Torque ratings range from 900 to 89,550 ft.-lb. Clutches are equipped with heavier, new-type spline tooth construction on clutch hub, center plates, and floating plates. — **Twin Disc Clutch Co., Racine, Wis.**

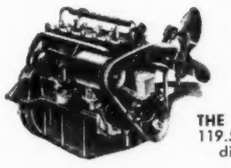
POWDER METALLIZING UNIT—Spraywelder makes it possible to combine advantages of both welding and metallizing procedure. Unit is operated in first part of process as powder metallizing unit to apply uniform overlay of Colmonoy hardfacing alloy. It is then used as conventional welding torch to fuse this sprayed overlay to base metal to obtain fusion or molecular bond, identical to that obtained when same alloy in rod form is applied by acetylene welding. There are only two control valves, both mounted on gun. Once adjusted, the powder flow may be stopped and started at will by pressing or releasing trigger. Gun may be hand operated or held in vise or with attachment in tool post of a lathe. Unit consists of gun and all necessary hoses, with connections. Hopper for powdered metal

(Continued on page 126)

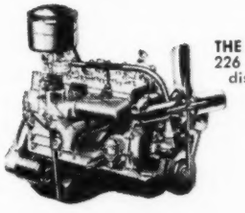
Talk about Performance...

"THIS FORD V-8 ENGINE RAN FOR MORE THAN 6 YEARS BEFORE MAJOR OVERHAUL WAS NECESSARY!"

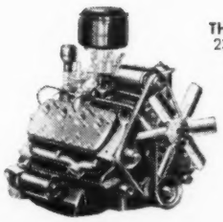




THE 40-H.P. FOUR
119.5 cubic inches displacement



THE 90-H.P. SIX
226 cubic inches displacement



THE 100-H.P. V-8
239 cubic inches displacement

The Hardie Oil Co. of Whitesville, Ky., has been using a Ford V-8 engine since April, 1939, to power an air compressor, developing 350 pounds pressure with a 50,000 cubic foot daily capacity. Dr. J. W. Hardie, company president, says, "This engine operates at 2,000 r.p.m. The oil filter is changed at specified intervals and the equipment is on a regular maintenance schedule. After two years, the engine was disassembled and checked, but as wear was negligible, no repair work was necessary! It was finally overhauled in August, 1945, for $90.00—the only mechanical expense, other than maintenance, since installation!"

Here is evidence of the fine performance of Ford engines! It's proof, too, that proper maintenance means extra-long life. And there's always a Ford Dealer nearby, with trained mechanics, and Genuine Ford Parts to *keep* your Ford engine in the most reliable condition.

For performance, economy and long life, Ford-built engines are preferred! See your local Ford Dealer, or write for detailed data. Address—

FORD MOTOR COMPANY
Industrial and Marine Engine Department
3506 SCHAEFER ROAD • DEARBORN, MICHIGAN

Ford engines are used to power—
Agricultural Machinery • Orchard Equipment • Air Compressors • Road and Construction Machinery • Derricks and Hoists • Electric Generating Plants • Arc Welders • Fire-Fighting Equipment • Industrial Tractors • Lumber and Saw Mill Equipment • Oil Field Equipment • Pumps • Railway Motor Cars • and many other applications.

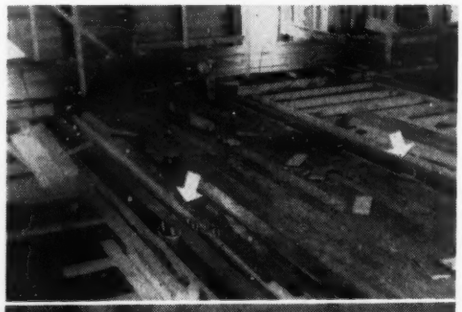
FORD-BUILT ENGINES

YOUR JOB IS WELL-POWERED WHEN IT'S FORD-POWERED!

Sonotubes Save PAT. APP. FOR.

LABOR TIME and MATERIAL

forming Supporting Columns



Showing SONOTUBE column form with reinforcing irons in position for pouring around steel I-beam when concrete floor is poured.

Note neat finished appearance of columns and ceiling after removing forms. The floor above carries a heavy load of machinery.

A 21-foot column made with SONOTUBE supporting roof has heavy steel braces set-in at second floor level for eventual support to second floor.

New and Novel Uses for Sonotubes
are saving construction dollars daily

IMMEDIATE DELIVERY

SIX STANDARD DIAMETERS

INSIDE DIAMETER					
8"	9"	10"	11¼"	12"	13½"
		SQUARE INCHES			
50.26	64	78.54	100	113.1	144

Lengths up to 24', Carload App. 2400', 13½" Diameter

Smaller Sizes Available

Write for literature and delivered prices

SONOCO PRODUCTS COMPANY

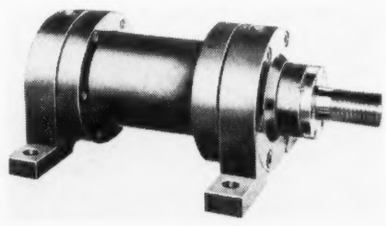
HARTSVILLE, S. C. MYSTIC, CONN.

ROCKINGHAM, N. C. GARWOOD, N. J. LOWELL, MASS.

(Continued from page 124)

and carburetor are combined in a single unit. In addition panel to hold all equipment is provided. **—Wall Colmonoy Corp., 19345 John R, Detroit 3, Mich.**

OIL HYDRAULIC CYLINDERS — Cylinder heads flame cut and machined from steel mill plate are incorporated in new line of cylinders. Ports can be easily and quickly repositioned to suit particular application. Caps, flanges, cylinder tubes, piston rods, and C-rings of all steel



construction reduce breakage. Pistons are aluminum alloy. Step seal piston rings insure more perfect seal. Neoprene O-rings replace conventional gaskets. Sealing action is automatic. All screw heads are in open and easily accessible from outside of cylinder, which is designed to operate at 1,500-p.s.i. working pressure. **— Lindberg Engineering Co., 2444 W. Hubbard St., Chicago 12, Ill.**

GRIFFIN

GRIFFIN

WELLPOINT SYSTEMS

JETTING PUMPS

SALE — RENT

Distributors

GRIFFIN ENGINEERING CORP.
2016 E. Adams St.
JACKSONVILLE, FLA.

GRIFFIN EQUIPMENT CO., INC.
548 Indiana Street
HAMMOND, INDIANA

GRIFFIN WELLPOINT CORP.

881 EAST 141st ST. • NEW YORK 54, N. Y.

Phones: MElrose 5-7704-5-6

The Heil 2-wheel tractor and twin cable scraper make an ideal combination. The 2-wheel tractor provides the speed and power, and the Heil Scraper provides fast, bonus loading, and fast, clean dumping.

Heil announces The HEILINER for new highs in earthmoving efficiency

. . . made possible by 21-mph speed, rapid acceleration, easy positive steering, and dependable operation of the *new* Heil 2-wheel Tractor—the Heiliner

High speed, lots of power, more trips, easy handling—you get all these in the new Heil 2-wheel tractor.

Although this unit is new to you, it is not new to Heil engineers. They job-tested it thoroughly in all kinds of weather, over all kinds of ground and fill conditions; made revolutionary improvements; added new features not found in conventional units of this type—so that today, this 2-wheel tractor is ready to go to work cutting costs for you.

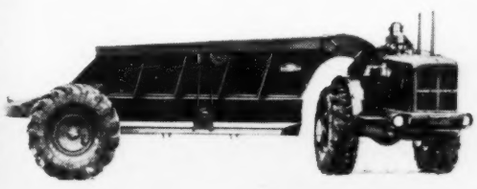
Here are a few of the features responsible for higher standards of performance, increased ease of operation, and greater economy:

- **Powerful, dependable Diesel engine**—famous, easy-starting International UD18A supplies the power.
- **Passenger-car steering** — exclusive Heil Hydrosteer provides hydraulic steering; prevents snaking, hunting, or nosing; and reduces operator fatigue.
- **Concentration of load on driving wheels**—even when the unit is empty, 70% of the gross weight is on the driving wheels, providing better traction over both rugged terrain and soft fills.
- **High speed and unusual maneuverability**—the Heil 2-wheel tractor has a 65-degree turning angle on each side. When equipped with a Heil Cable Scraper, it turns on a 22-foot radius.

Here is just the unit to take the kinks out of your earthmoving program—to open up the bottlenecks. Write us for latest descriptive literature or get the facts from the International Power Distributor nearest you.

R-91

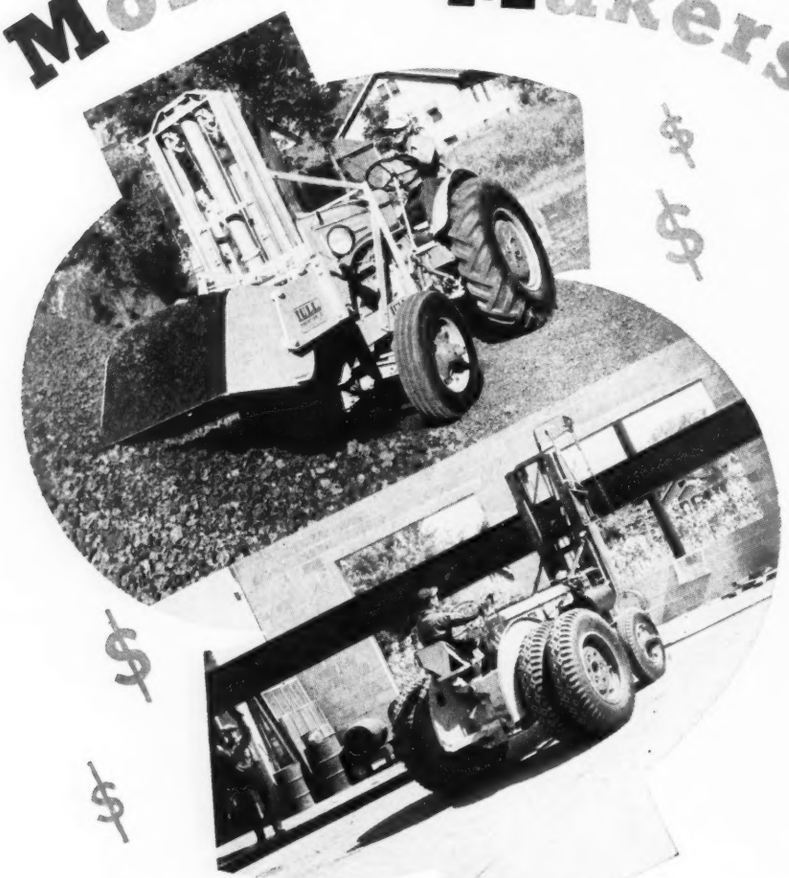
Equipped with Heil's high-clearance (35" with doors open) bottom-dump wagon, this new 2-wheel tractor unit speeds hauling and dumping.



THE HEIL CO.

GENERAL OFFICES • MILWAUKEE 1, WISCONSIN

Money Makers



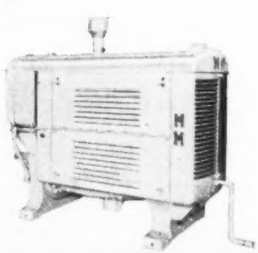
$AVINGS THROUGH
Easy handling

MM INDUSTRIAL TRACTORS
greater mobility and utility

MM Industrial Tractors handle heaviest loads *easily, speedily.* Short turning radius, wide range of speeds, and easiest steering ever offered in equipment of this capacity assures *cost-cutting mobility;* efficient attachments for lifting, loading, materials handling, and maintenance work assures *profit-boosting utility. YOU* can cut your costs with *economical, versatile* MM Industrial Tractors.

MM POWER UNITS

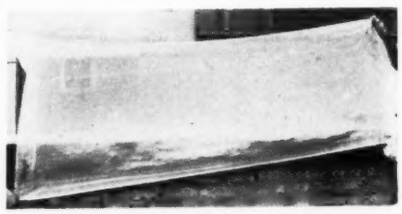
Economy, dependability and long life performance is a matter of sound engineering. MM Power Units have it! Eight sizes from 21 H.P. to 242 H.P. are serving industry in a wide variety of applications that call for rugged power units of *proved performance.*



MINNEAPOLIS-MOLINE
MODERN MACHINERY

MINNEAPOLIS-MOLINE
POWER IMPLEMENT COMPANY
MINNEAPOLIS 1, MINNESOTA

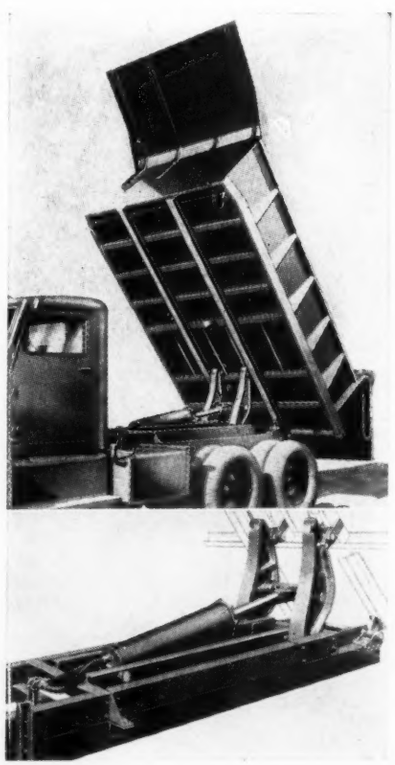
WATERPROOFING MEMBRANE— Glasfab, inorganic, rot-proof waterproofing membrane consisting of open-mesh fabric woven of Fiberglas yarns, is designed for roofing applications, for waterproofing brick or concrete walls above or below grades, and for other waterproofing jobs Open mesh permits full impregnation



by waterproofing compound. Impregnated fabric adheres firmly to rough or irregular surfaces, molding itself to contours. Glass yarn does not char or burn when hot mopped, and fibers do not conduct moisture into waterproofing compound or act as wicks to permit escape of volatile oils essential to durability. Yarn is made by Owens-Corning Fiberglas Corp. of Toledo.—**Lexington Supply Co., Cleveland, Ohio.**

DUMP BODIES AND HOISTS— Designated as 300 series of dump bodies and No. 827 Iso-draulic roll-a-lift hoist, these new models are designed for rugged service. Bodies, with 2 to 12-yd. capacity, are carefully constructed of 8-gage high-resistant sheet steel, heavily braced at all points of stress. Body under-

(Continued on page 130)



Can I fill my Hose Requirements with pre-war quality goods?

Your Thermoid Distributor* Will Know!

He will tell you *No.* Today's products carrying the Thermoid trade mark are even better than pre-war quality. War born experiences plus latest technical advances provide the added quality. This new quality is in production . . . it is no longer necessary to take whatever you can get.

He can also tell you—

That Thermoid hose is made in a wide range of types and sizes. And, every type measures up to the service conditions for which it is sold.

He knows something about Thermoid too—

Thermoid concentrates its manufacturing for industry on the well integrated line shown below. The Company itself, is large enough for precise, low cost, high quality production, but small enough to be quickly responsive to customers' specific problems. That's one of the reasons why—

It's Good Business To Do Business With Thermoid!

* A postcard or a letter to the home office will bring his name and address to you.

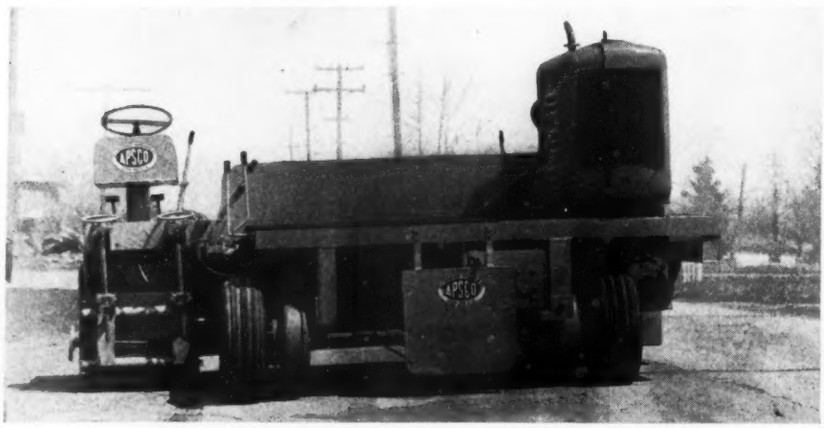
Manufacturers of new equipment are invited to correspond direct with the home office.

Thermoid
PRODUCTS FOR INDUSTRY
BUILT FOR THE JOB
QUALITY VALUE SERVICE

Thermoid Products
Automotive • Industrial
Oil Field • Textile
Thermoid Company, Trenton, N. J., U. S. A.

The Thermoid Line Includes: Industrial Brake Linings and Friction Products • Transmission Belting • F.H.P. and Multiple V-Belts • Conveyor Belting • Elevator Belting • Wrapped and Molded Hose • Custom Molded Parts.

It's Easy, Fast, Economical to widen roads with the



APSCO Road Widener

● This modern machine offers contractors, state, county and city highway departments a practical, time and labor saving method for widening roads.

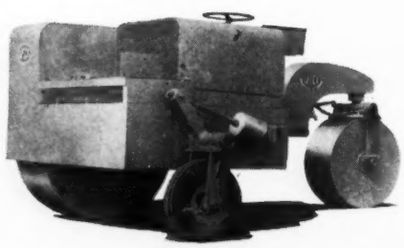
It handles all types of material from 2" down, including hot or cold bituminous mix, sand, gravel, stone, dirt, etc. Standard unit will spread a 2 to 4 foot width—any depth—and will handle over 120 tons an hour. Other widths available.

The machine is easily controlled by operator and truck driver merely dumps material into hopper while widening machine is in operation. The machine is accurate—leaves a straight edge without use of road forms—no raking or carrying back necessary.

Write for general specifications

APSCO Trench Roller

One of the most practical features of the APSCO Trench Roller is the pneumatic tired leveling wheel with adjustment by powered screw-type leveling unit. An advantage both in operation and when hauling roller from one job to another. In operation, the elasticity of the pneumatic tire prevents roller from damaging forms when leveling wheel hits an obstruction. In hauling tire eliminates side slipping when loading on carry all or flat car . . . Automotive type steering gives greater maneuverability providing 45° turning radius. Front roll 15" wide—rear 18" wide. Write for complete specifications.



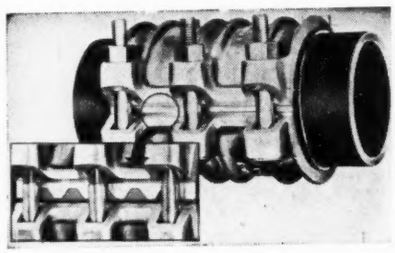
THE ALL-PURPOSE SPREADER CO.
FULLER ROAD . . . ELYRIA, OHIO

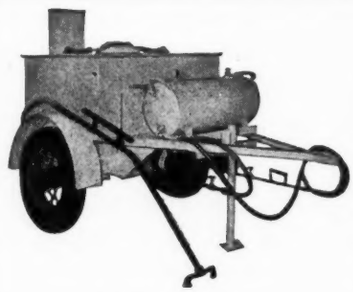
(Continued from page 128)

structure is made of 4-in. I-beam cross-bolsters and 5-in. I-beam longitudinal sills, all securely welded together and welded to body. Upper surfaces of two lift arms of hoist engage two pressure rollers mounted on body. Design is such that at beginning of stroke, where lift is heaviest, greatest leverage is provided. Two keeper-rollers travel along underside of lift arm flanges, keeping pressure rollers in constant contact with arms regardless of body position.—**Perfection Steel Body Co., Galion, Ohio.**

REPAIR CLAMP—New Smith-Blair cast bronze full circle repair clamp is installed by bolting together two halves of coupling over broken or split cast iron or cement-asbestos

(Continued on page 136)





HEATING KETTLES
FOR ASPHALT AND TAR
Fire Proof — Oil Burning
Hand and Motor Driven Spray

Other Products

CONCRETE VIBRATORS
Gasoline Engine and Electric Motor Driven Models

FRONT END SHOVELS
For Industrial Tractors

AGGREGATE DRYERS
for Stone and Sand

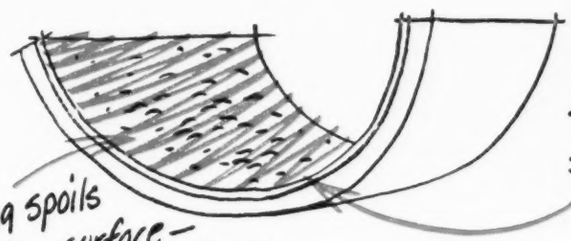
ASPHALT PLANTS
Portable — Stationary

Write for Circulars

White Mfg. Co.
ELKHART INDIANA

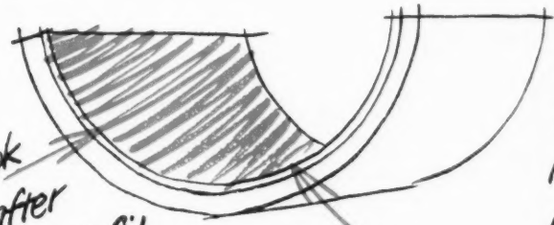
LUBE MEMO

Why it's smart to avoid "metal eating" lube oils



Heat and air in Diesels make many oils corrosive so they "eat" lead from structure of alloy bearings

pitting spoils bearing surface — leads to failure



Joe says bearings look like this after using RPM Delo Oil

1. RPM Delo Diesel Engine Lubricating Oil contains anti-oxidant compound, resists effects of heat and air.
2. Gives bearings direct protection against corrosion.

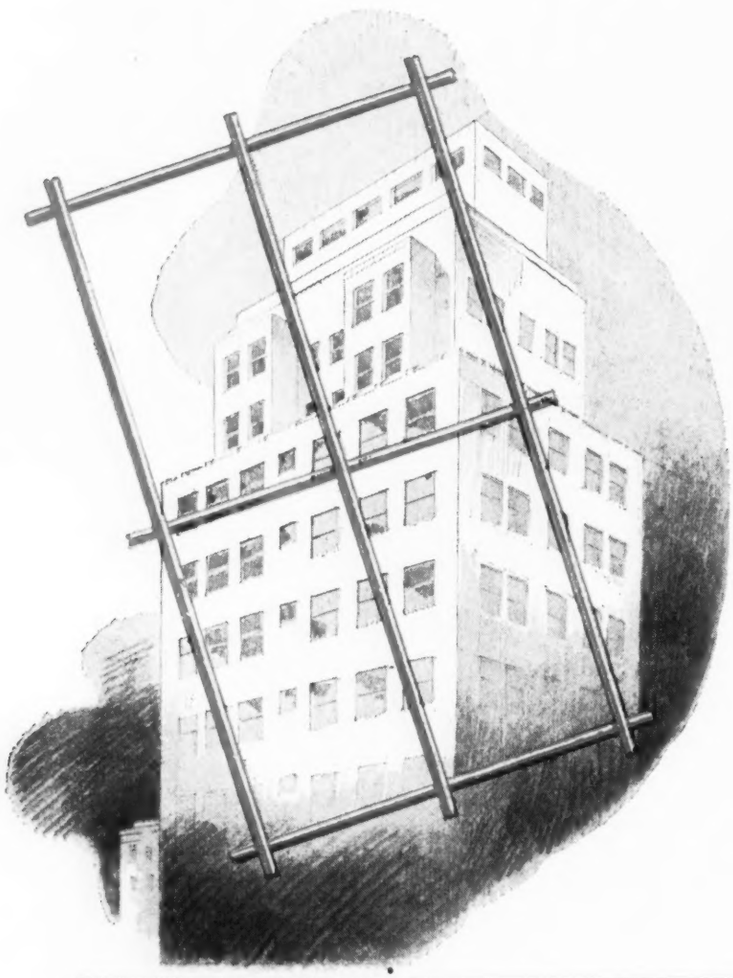
DIESEL ENGINE RPM DELO LUBRICATING OIL

Note — arrange trial of RPM Delo Oil ... looks like it'll save us $$!

STANDARD OF CALIFORNIA • San Francisco, Calif.
THE CALIFORNIA COMPANY • Denver, Colo.
STANDARD OIL COMPANY OF TEXAS • El Paso, Texas
THE CALIFORNIA OIL COMPANY • New York

When you build with concrete...

specify American Welded Wire Fabric reinforcement



● U·S·S American Welded Wire Fabric fortifies the concrete slab against stresses and strains in all directions. Made of high yield point cold drawn steel wires, electrically welded, it is the most widely used fabricated reinforcement for concrete.

On every concrete construction job, no matter how large or how small, there is a place where the use of American Welded Wire Fabric will effect worthwhile economies.

When you build with concrete, specify American Fabric. It is made by the world's largest manufacturer of prefabricated reinforcing materials.

American Steel & Wire Company
Cleveland, Chicago and New York

Columbia Steel Company, San Francisco
Pacific Coast Distributors

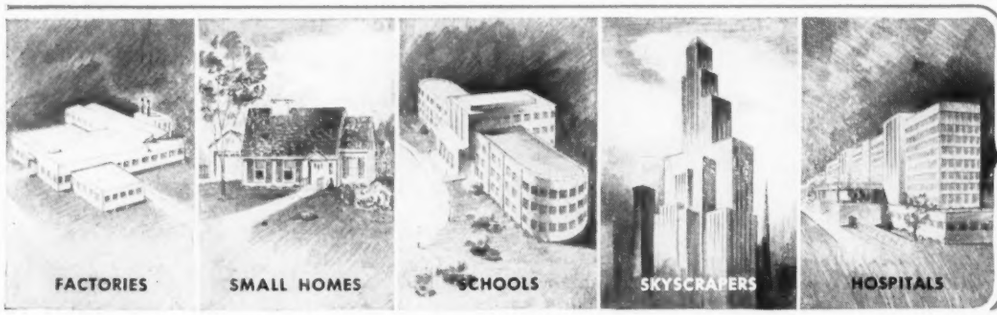
Tennessee Coal, Iron & Railroad Company, Birmingham
Southern Distributors

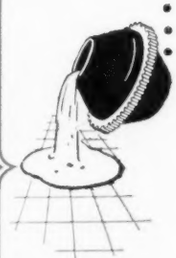
United States Steel Export Company, New York

UNITED STATES STEEL

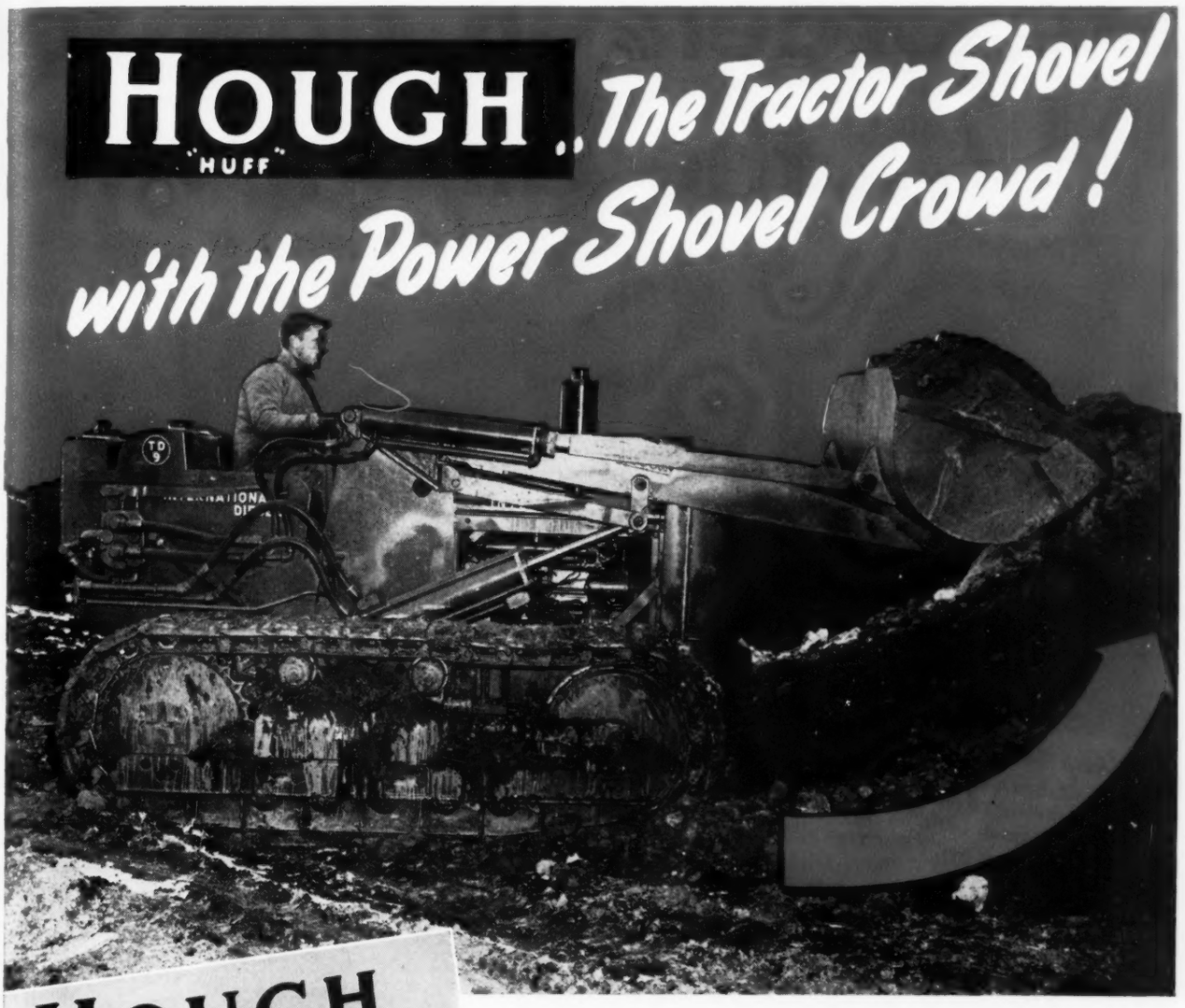
AMERICAN STEEL & WIRE COMPANY
USS
AMERICAN WELDED WIRE FABRIC
UNITED STATES STEEL

Every type of concrete construction needs American Welded Wire Fabric **reinforcement.**





HOUGH "HUFF" ... The Tractor Shovel with the Power Shovel Crowd!



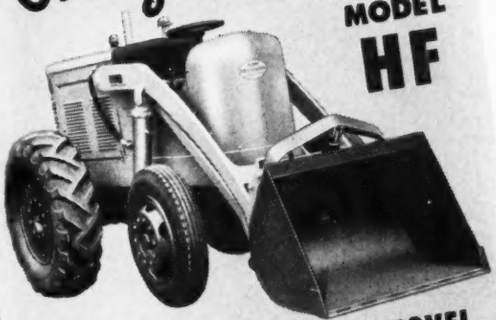
The Hough Bulldozer-Shovel gives you true crowding action...faster, easier penetration into the face of the cut ...full capacity bucket loads, because the Bucket crowds forward a full 19", exclusive of the forward motion of the tractor. In addition, as the bucket is raised it tips back automatically 38° turning the Bucket cutting edge into the cut for better cutting action, thereby assuring full Bucket capacity as well as preventing spillage.

The Hough 1 Yd. Bulldozer-Shovel, built for International Model T9 and TD-9 Crawler Tractors, has many more yardage producing features—the hydraulic dump, oscillating tracks, down pressure, complete visibility, fast operating cycle, plus ready convertibility for Bulldozer use — features which add up to lower cost yardage on any job. For complete details see your near-by Hough-International Industrial Distributor.

PROVEN PERFORMANCE — OVER 6500 HOUGH TRACTOR SHOVELS BUILT

HOUGH "HUFF" Payloader PATENTED

MODEL HF



A MOBILE VERSATILE SHOVEL

The 3/4 Yd. Model HF is the newest addition to the famous Hough Payloader line. It digs, loads, carries, dumps, grades ... truly a one man construction crew. Bulldozer blade and crane hook available to increase its utility. Send for complete details in new bulletin No. 166.

THE FRANK G. HOUGH CO.

MATERIAL HANDLING EQUIPMENT SINCE 1920

706 SUNNYSIDE AVE., LIBERTYVILLE ILL.

Get orders in now for
...the dirtmover's

Grading building sites

You will find this small, fast Tournapull extremely useful on subdivision work, grading for small industrial plants and building sites. Excellent for landscaping. Rig is selfloading . . . works alone or in fleet operation.

Building access roads

On small cut and fill jobs, one man with a D Tournapull can handle complete job . . . rough grading, finishing and ditching in minimum time. Goes in where trucks would stall. Travels job-to-job at high speed on highway or cross country.

Material handling

If you have material stockpile problems . . . coal, cinders, crushed stone, ore, fertilizer, chemical . . . here is a handy one-man self-powered Carryall to move materials . . . will load, haul, pile, spread, load from ramp to cars, trucks, or conveyors.

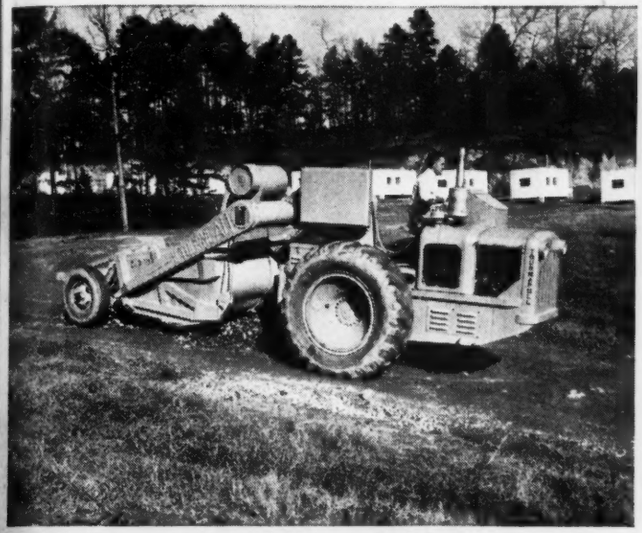
Tournapull Carryall — Trade Mark Reg. U. S. Pat. Off. R115c

LE TOURNEAU LET EQUIPMENT

See your Le Tourneau Distributor NOW for complete information

NEW D TOURNAPULL

handyman ....



Dig, haul and spread gravel

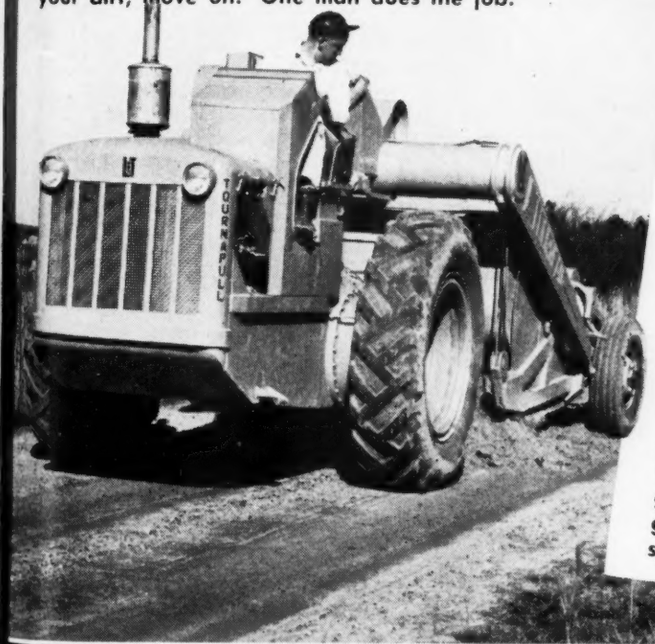
Rig strips, loads, hauls and spreads from roadside pits. One man handles entire operation. Ideal for graveling farm yards, shoulders, access roads, detours, patching roads, filling mudholes, shortening curves.

Stripping light overburden

A versatile utility dirtmover around mines, quarries, sand and gravel plants, clay pits. Strips light overburden, cleans up in pit, clears slides, gravels roads, handles drainage. Will haul where trucks stall.

Road maintenance

Makes quick repairs anywhere in county anytime. 20 miles is less than an hour away, no time lost loading equipment, no trailer needed. Hop on and go, move your dirt, move on. One man does the job.



Leveling farm land

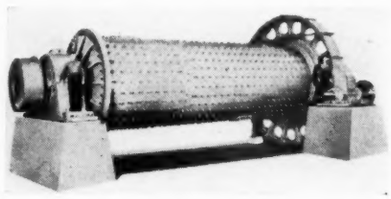
Fits the small job, a useful auxiliary tool on big land-leveling projects. Makes money on the scattered jobs, good rig for stock pond excavations. Can grade and gravel farm roads, build dirt dams, dig, bring in and spread black dirt, or spread top soil on peat land.

LETOURNEAU PEORIA, ILLINOIS — HIGH-SPEED UTILITY — TOURNAPULLS

(Continued from page 130)

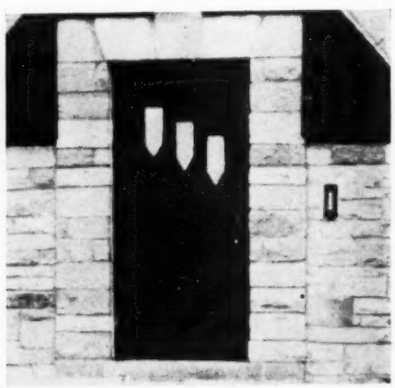
pipe in about 6 min. Permanence of repair is said to be insured by use of bronze for coupling and duronze nuts and bolts. Clamp forms complete water-tight circle that compensates expansion and contraction of pipe. Special molded rubber gaskets with copper armor are bonded to inside of coupling sleeves so that fingers may slide easily over gaskets until they overlap to form full wrap-around. Thus, rubber gasket cannot wrinkle or gather under coupling. Result is said to be encirclement with pressure so well equalized that even weak-walled pipes are not crushed. Tests show coupling in 4-in. dia. size will hold 1,000-lb. hydrostatic pressure.—**Smith-Blair Co., South San Francisco, Calif.**

GRINDING MACHINERY—Primary jaw crushers are available in larger sizes from 30x42 in. up to 72x96 in.; primary gyratory crushers in sizes from 30 to 72 in.; and grinding mills



(illustrated) from 6 ft. to 10 ft. 8 in. in diameter and up to 50 ft. in length. Rotary dryers, calciners, kilns and coolers have also been added to product range of company's Process Machinery Division.—**Nordberg Mfg. Co., Milwaukee 7, Wis.**

PACKAGED STONE ENTRANCE—Typical stone entrance package consists of some 35 units of stone, each piece precisely cut and numbered at quarry, for laying by home builder into specific entrance pattern. Stone



units are compactly crated and shipped to homesite along with blueprint showing correct position for each of numbered cut stones. Any competent bricklayer can do job. —**Conco Building Products, Inc., Mendota, Ill.**

So that's why we've been exporting so many Crosby Clips to Africa!

704

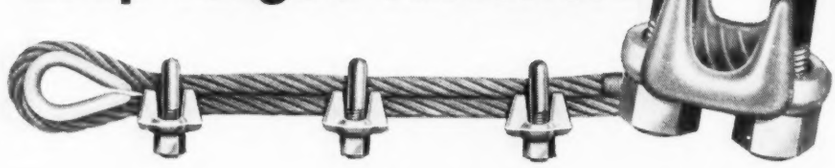
Facts are facts. CROSBY CLIPS outsell all other drop-forged wire rope fasteners combined. Why? Because the basically correct design gives the CROSBY CLIP a "vise-tight" grip on two strands of wire rope; locks the loop with positive strength and safety. Channel grooved base . . . tough drop-forged steel . . . hot dip galvanized. Sold by distributors everywhere; made only at St. Paul, Minnesota by American Hoist and Derrick Co.

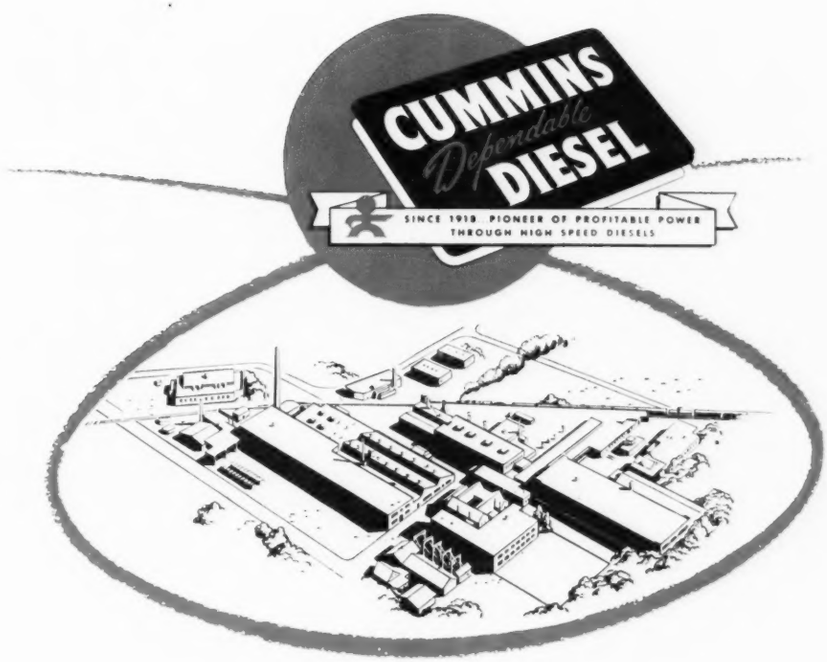
Industry buys more

CROSBY CLIPS

than all other

drop-forged fasteners





THIS FACTORY IS TOO SMALL

To Completely Satisfy Present Unprecedented User Demand

EVEN THOUGH . . . since the end of the war . . . Cummins have:

- spent three million dollars ($3,000,000) expanding their plant;
- increased floor space forty-four and eight-tenths per cent (44.8%).

BUT . . . this factory IS large enough:

- to build most of the Diesel Engines for the tough "premium" jobs;
- to assure users that Cummins quality and dependability will not be sacrificed to gain production volume.

CUMMINS ENGINE COMPANY, INC., COLUMBUS, INDIANA

SAVES TIME
SAVES MATERIAL
SAVES LABOR
SAVES LIVES

WINTER OR SUMMER—THE NEW HIGHWAY MODEL B-29 IS ALWAYS ON THE JOB

The Model B-29 is designed for around the year usefulness giving highest efficiency and low operating costs. As an ice control unit it speeds to danger spots and spreads sand or cinders without wasting time or material. Spreading may be started or stopped while truck is traveling at any speed. Twin distributor discs provide uniform spread, casting to left, right or both sides as desired. Material is cast low to ground and ahead of rear wheels of truck permitting safety at operating speeds, and eliminating interference with traffic. The full width of a 2 or 4 lane highway can be covered in one operation. One man operates the truck and controls the spreader from cab.

NEVER OUT OF SEASON

The answer to the need for an all-year machine, the Model B-29 can be used for applying a seal coat on highways and streets, for dust control with calcium chloride, to stop bleeding on black top in hot weather, for hauling sand, chips, crushed rock, etc., for road construction and maintenance. Illustration shows the Model B-29 spreading road rock on secondary highway.

Write for Literature

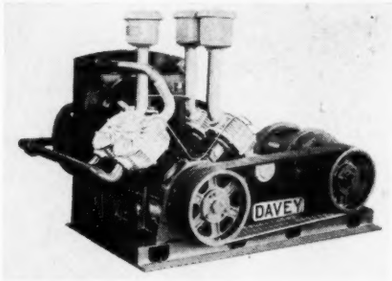
SOLD AND SERVICED BY LEADING CONSTRUCTION MACHINERY DEALERS THROUGHOUT THE UNITED STATES, CANADA, AND FOREIGN COUNTRIES

HIGHWAY EQUIPMENT COMPANY, INC.

602 D AVENUE N. W., CEDAR RAPIDS, IOWA

MANUFACTURERS OF THE WORLD'S MOST COMPLETE LINE OF SPREADERS

AIR COMPRESSOR—Complete new line of two-stage, air-cooled industrial air compressors of 60, 105, 160, 210 and 315-cfm. capacities features permanent peak efficiency valves and new Davey equi-balanced crank-



shaft, which is said to reduce compressor vibration to previously unachieved minimum. Its use, coupled with employment of modern rubber vibration mounts, makes possible elimination of heavy mounting bases and facilitates ready removal of units from one location to another. **—Davey Compressor Co., Kent, Ohio.**

RAYON CONVEYOR BELT—Conveyor belt with rayon cord plies is designed to meet need for belt of higher tensile strength to increase heavy-duty, long-lift conditions. **—Raybestos-Manhattan, Inc., Passaic, N. J.**

Shunk

Superior Quality

BLADES AND CUTTING EDGES

For any make of machine
Motor Graders, Maintainers, Scrapers, Drags, Bulldozers, Backfillers, Wagon Scrapers, Trail Builders, Trail Blazers, Carryalls. Also—

CUTTING EDGES
WEARING BOOTS
BACK SLOPERS
EXTENSION BLADES
MOLDBOARDS
and
SCARIFIER TEETH

50 years of manufacturing blades has developed for you a special steel, milled through our own rolls and forged at the edges to give that extra wearing quality you need.

All widths lengths, and thicknesses, punched ready to fit your machine.

Consult your internationally recognized Blade Specialists. Write for special bulletins, giving type and name of machines you operate—get set for Blades early.

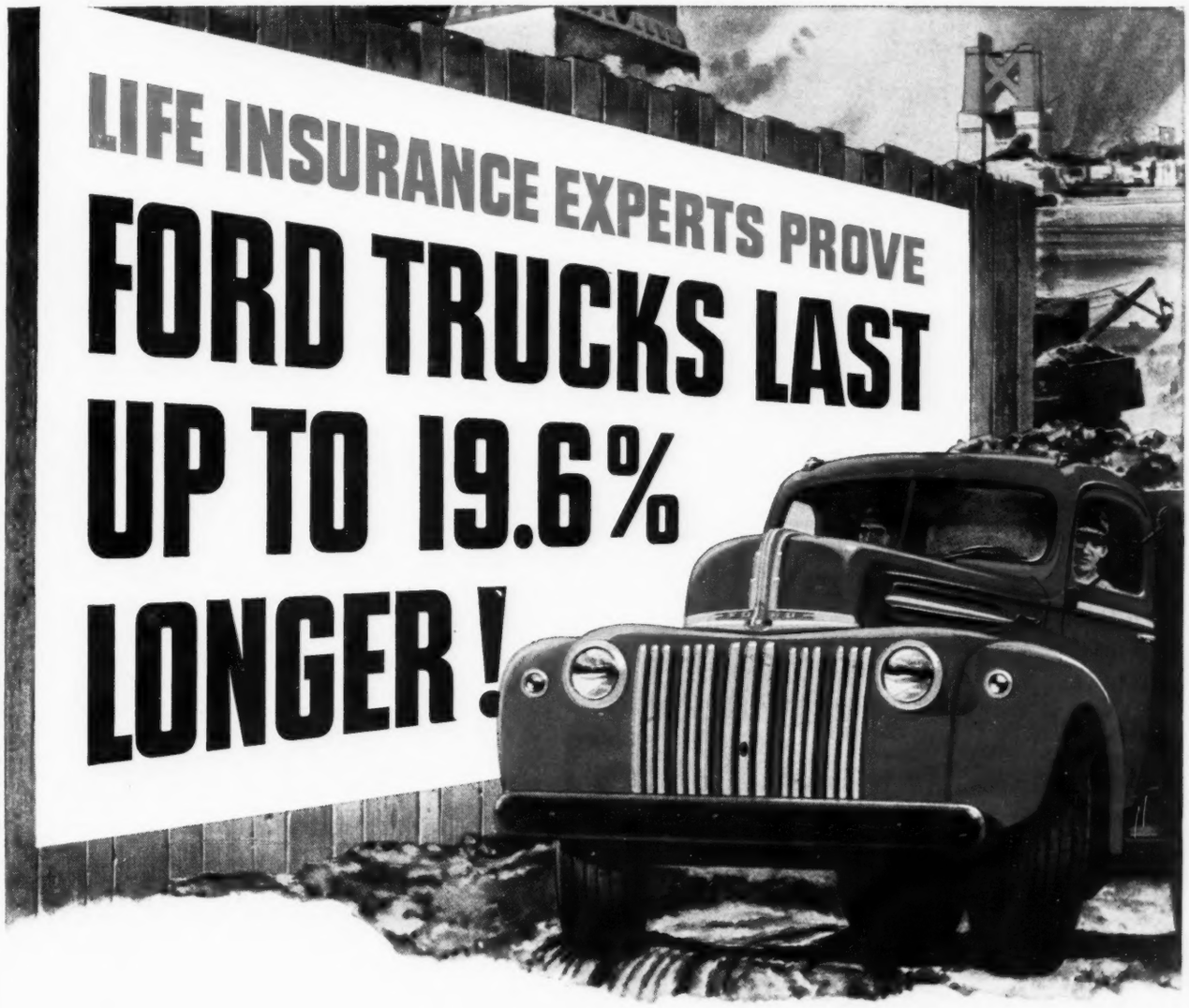
Shunk

Member of A.E.D.

MANUFACTURING COMPANY

Established 1854

BUCYRUS, OHIO,



NO LONGER need you guess about which make of truck to buy! Now you can know, beforehand, *which* one of all five sales leaders has delivered the longest service, which has the longest life-expectancy! Ford!

And the proof is *certified* proof! Certified by the same scientific methods used by life insurance companies in computing their rates!

4,967,000 Trucks Studied. Wolfe, Corcoran and Linder, noted New York Life Insurance Actuaries, assembled the records of all trucks of the five sales leaders registered from 1933 through 1941—a total of *4,967,000* trucks! Then they prepared *truck* life-expectancy tables in the same identical manner in which they prepare *human* life-expectancy tables for life insurance companies.

Ford Wins! Up to 19.6% longer life for Ford Trucks! Up to 19.6% longer life than the four other sales leaders! That's what the certified truck life-expectancy tables prove! The reason? Ford knows how to build trucks to last longer. Ford Trucks are built stronger! See your Ford Dealer today. He'll show you why it's good business to wait for the truck with the longest life-expectancy—Ford!

Certified proof

FORD TRUCKS LAST LONGER

The life-expectancy of a Ford Truck is:

13.1% longer than that of Truck "B"
3.2% longer than that of Truck "C"
7.6% longer than that of Truck "D"
19.6% longer than that of Truck "E"

OFFICIAL ACTUARIAL CERTIFICATE

Based on the application of sound and accepted actuarial methods to the actual experience as measured by truck registrations, we hereby certify that, in our opinion, the accompanying table fairly presents the relative life-expectancy of the trucks involved.

WOLFE, CORCORAN AND LINDER
Life Insurance Actuaries, New York, N. Y.

what means to milk . . .

means to mixers!

● On a milk bottle, "Grade A" is your protection . . . your guarantee of top quality. Similarly, the AGC rating plates are your protection on mixers and pavers . . . your guarantee of capacity and performance.

The AGC rating plates eliminate the guesswork . . . the "blindfold" methods of equipment buying. They are your assurance *in advance* that a mixer or paver will deliver its rated capacity . . . will live up to the standards set up by the Mixer Manufacturers Bureau.

Next time you're in the market for a mixer or paver, insist upon equipment wearing the AGC Plate. You'll find you'll be making job estimates . . . not "guesstimates."

MIXER MANUFACTURERS BUREAU

Affiliated with the Associated General Contractors of America, Inc.

Member Names

Chain Belt Company
Milwaukee, Wis.

Construction Machinery Co.
Waterloo, Iowa

Koehring Company
Milwaukee, Wis.

Ransome Machinery Co.
Dunellen, N. J.

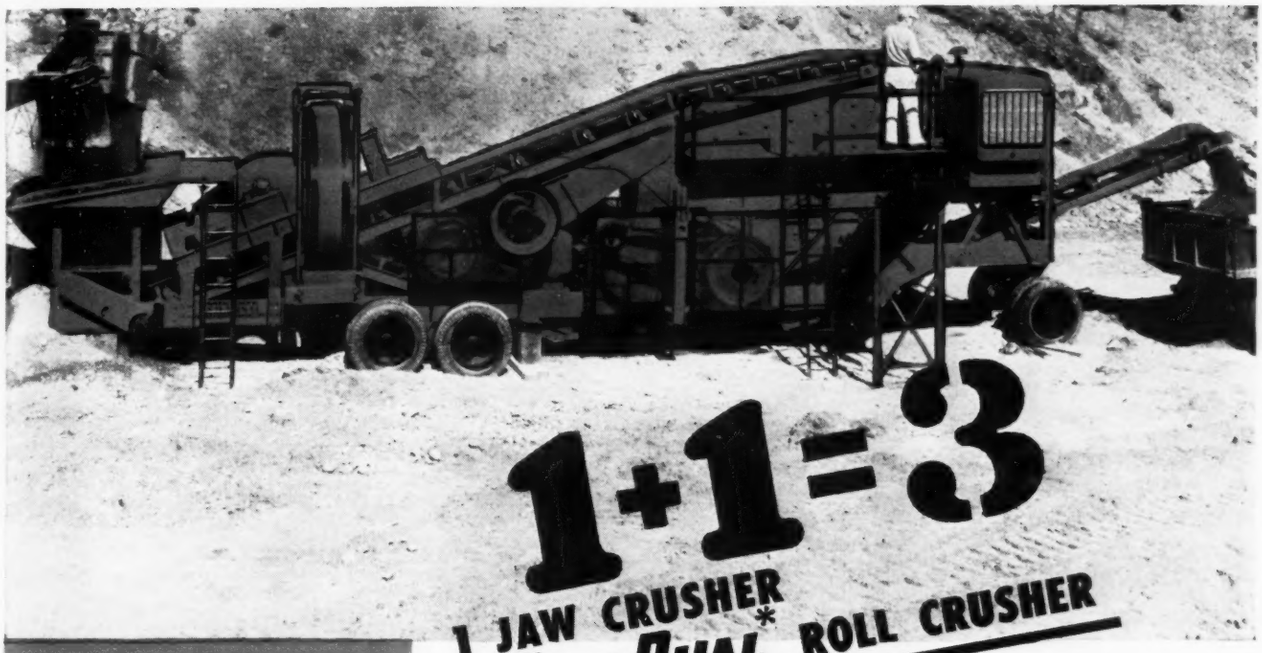
Kwik-Mix Company
Port Washington, Wis.

The Foote Co., Inc.
Nunda, N. Y.

The Jaeger Machine Co.
Columbus, Ohio

The T. L. Smith Company
Milwaukee, Wis.

The Knickerbocker Co.
Jackson, Mich.



1+1=3

1 JAW CRUSHER
1 TWINDUAL* ROLL CRUSHER
3 STAGES OF REDUCTION

THE AMAZING NEW UNIVERSAL TWINDUAL* MASTER

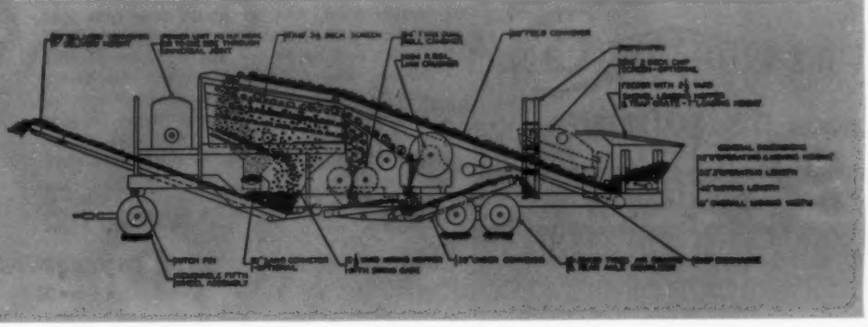
Here's the first really new and advanced post-war gravel plant. Size for size and weight for weight the **TWINDUAL*** MASTER has no equal for production. Under identical pit conditions it has out-produced larger, conventional model plants by 50 to 100%. **TWINDUAL*** Rolls give two stages of secondary reduction and provide amazing capacity with savings in weight and power. Permits 100% wider primary discharge opening, doubling jaw crusher capacity and reducing jaw wear. For the first time, 3 full stages of reduction in a complete single-unit gravel plant. *First* stage—JAW CRUSHER; *second* and *third* stages—**TWINDUAL*** ROLLS. Universal "Stream-Flo" Engineering again sets the standard for profit-making production and ready portability. For TOP CAPACITY at lowest cost per yard investigate the new **TWINDUAL*** MASTER.

WRITE FOR BULLETIN No. 682

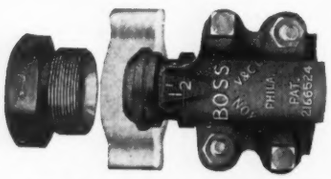
•

UNIVERSAL ENGINEERING CORPORATION
327 Eighth Street N. W. **Cedar Rapids, Iowa**

*PATENTED

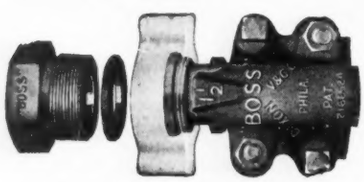


Designed to Assure Unequalled Safety and Efficiency on All Types of Hose



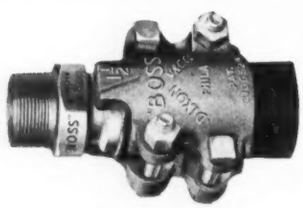
"GJ-BOSS" GROUND JOINT FEMALE HOSE COUPLING

STYLE X-34. Strong, durable, *washerless*. "Boss" Offset Interlocking Clamps assure powerful, full-circumference grip on the hose, without pinching. Proof against straight line leaks and blow-offs. Large Wing Nut facilitates coupling and uncoupling. Sizes 1/4" to 6". Cadmium plated—rustproof.



"BOSS" WASHER TYPE FEMALE HOSE COUPLING

STYLE W-16. Same as "G J-Boss," above, except that leakproof seal is made with washer instead of ground joint union between stem and spud. Sizes 1/4" to 6".



"BOSS" MALE COUPLING

STYLE MX-16. Companion to both "G J-Boss" and "Boss" Female Couplings, and furnished with same clamps. Strongest and safest of its kind for all applications. More convenient and economical than regular iron pipe nipples—each size fits same size straight end hose. Sizes 1/4" to 6". Cadmium plated—rustproof.

Stocked by Manufacturers and Jobbers of Mechanical Rubber Goods.

IF IT'S A DIXON PRODUCT

IT'S DEPENDABLE

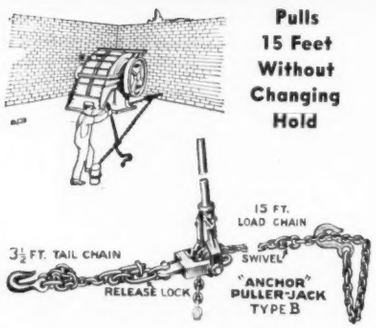
DIXON
VALVE & COUPLING CO.
Main Office and Factory: PHILADELPHIA, PA.
BRANCHES: CHICAGO · BIRMINGHAM · LOS ANGELES · HOUSTON

PNEUMATIC CONCRETE INJECTOR—Machine is now available by which various kinds of cementatious or inert grout compositions, even

coarse aggregate concrete, can be placed by pneumatic injection, with greatly reduced water ratios.—**Prehy Co., Graybar Bldg., New York 17, N. Y.**

STEAM HOSE — Improved "burst-proof" steam hose is said to have tube and cover that do not harden as much after prolonged exposure to steam at high pressures.—**B. F. Goodrich Co., Akron, Ohio.**

One Man **Moves 5 Tons with the ANCHOR Puller-Jack!**



Pulls 15 Feet Without Changing Hold

Here's a one-man gang that quickly repays its price in labor, time and money saved. Has 3 tons direct pulling power, or 5 tons with sheave block. Pulls 15 feet without changing hold. Can be operated upright, sideways or upside down, with lever pull away from load or toward it. Simple, strong, foolproof. Practically nothing to get out of order. Positive action, always holds. Compact, quick and easy to set up and use. Hundreds of uses for this powerful tool wherever heavy objects must be moved. Order an ANCHOR Puller-Jack today, or write for descriptive catalog.

$57.50 F.O.B. Bowerston, Ohio. Jack complete with 3 ft. steel tube handle, 15 ft. load chain with slip hook, and release lock. Longer chains available.

THE MINING SAFETY DEVICE COMPANY

DEPT. 1B • • • BOWERSTON, OHIO

Worthington-Ransome Blue Brute Distributors

See ad on Page 143 for list of equipment in each line

Worthington-Ransome Distributors

Ala., Birmingham, Construction Equipment Co.
Alaska, Anchorage, Airport Mach. & Storage Co.
Ariz., Phoenix, Lee Redman Equipment Co.
Ark., Fort Smith, R. A. Young & Son
Little Rock, R. A. Young & Son
Cal., L. A. Golden State Equip. Co.
Colo., Denver, Power Equipment Co.
Conn., Wallingford, Wilhelm-Davies Co., Inc.
Fla., Gainesville Constr. Equip. & Supply Co., Inc.
Fla., Miami, Allied Equip., Inc.
Orlando, Highway Equipment and Supply Co.
Tampa, Epperson & Company
Ga., Atlanta, Tractor & Machinery Company
Ida., Boise, Olson Manufacturing Co.
Ill., Chicago, Chicago Construction Equip. Co.
Ill., Chicago, Thomas Hoist Co.
Ill., Chicago, J. A. Roche
Iowa, Cedar Rapids, McNall Mach. & Supply Corp.
Kansas, Topeka, M. B. Salisbury Co.
Ky., Harlan, Croushorn Equip. & Supply Co.
Louisville, Williams Tractor Co.
Mass., Cambridge, Field Machy. Co.
Mass. West Springfield, E. F. Edson Co., Inc.
Mich., Detroit, W. H. Anderson Co. Inc.
Mich., Muskegon, Lakeshore Machy. & Supply Co.
Minn., Minneapolis, Phillippi-Murphy Equip. Co.
Miss., Jackson, Jackson Road Equip. Co.
Mo., Clayton, The Howard Corporation
Mo., Kansas City, Mach. & Supplies Co , Inc.
St. Louis, W. H. Reaves
Montana, Billings, Interstate Truck & Equip. Co.
Helena, Caird Eng. Works
Montana, Missoula, Miller Machinery Co.
Nevada, Elko, C. W. Paul Hardware and Machy. Co
N. Hampshire, Manchester, R.C. Hazelton Co., Inc.
N. J., No. Bergen, American Air Comp. Corp.
N. M., Albuquerque, Bud Fisher Co.
Roswell, Smith Machy. Co.
N. Y., Albany, Milton-Hale Machinery Co.
New York, Hodge & Hammond, Inc.
New York, Railroad Materials Corp.
Syracuse, Milton-Hale Mach. Co.
N. C., High Point, Smith Equip. Co.
N. D., Fargo, Smith Commercial Body Works, Inc.
Ohio, Cincinnati, Carroll-Edwards & Co.
Dayton, Carroll-Edwards & Co.
Ohio, Toledo, The Kilcorse Machy. Co.
Okla., Oklahoma City, Tattan-Douglass Equip. Co.
Oregon, Portland, Andrews Machinery
Pa., Wilkes-Barre, Ensminger & Co.
Mechanicsburg, Amer. Equip. Corp.
Philadelphia, Metalweld, Inc.
S. C., Columbia, Smith Equipment Co.
Tenn., Knoxville, Dempster Bros., Inc.
Memphis, Independent Tractor Co.
Nashville, Dempster Bros., Inc.
Tex., Amarillo, T. W. Carpenter Equip. Co.
Dallas, Shaw Equip. Co.
Texas, Houston, So. Texas Equip. Co., Inc.
San Antonio, Patten Machy. Co.
Tyler, D. M. McClure Equip. Co.
Utah, Salt Lake City, J. K. Wheeler Mach. Co.
Vt., Barre, A. M. Flanders, Inc.
Va., Richmond, Highway Machy. and Supply Co.
W. Va., South Charleston, Allied Equip. Co.
Wash., Seattle, Star Machy. Co.
Wisc., Milwaukee, Drott Tractor Co., Inc.

Ransome Distributors

Colo., Denver, Mountain Region Supply Co.
D. C., Washington, M. A. Doetsch Mach. Co.
La., New Orleans, Ole K. Olson Co.
Md., Baltimore, Stuart M. Christhilf & Co.
N. Y., Buffalo, Murray Equip. Co.
N. Y., Rochester, B-G Equip. Co.
O., Cleveland, H. B. Fuller Equip. Co.
Pa., Pittsburgh, Arrow Supply Company

Worthington Distributors

Ind., Indianapolis, Reid-Holcomb Company
La., New Orleans, Wm. F. Surgi Equip. Co.
Md., Baltimore, D. C. Elphinstone, Inc.
Flint, Gransden-Hall & Co.
N. Y., Buffalo, Dow & Co., Inc.
New York, Air Compressor Rental and Sales
O., Cleveland, Gibson-Stewart Co.
Pa., Allentown, H. N. Crowder, Jr., Inc.
Pittsburgh, Atlas Equip. Corp.
Texas, El Paso, Equip. Supply Co.
Wyoming, Cheyenne, Wilson Equip. & Supply Co.

Buy Blue Brutes

Worthington Pump and Machinery Corp.

Worthington-Ransome Construction Equipment Division

Holyoke, Massachusetts

BREAK IT UP FASTER WITH BLUE BRUTES

Your bids for jobs involving paving breaking carry extra profit margins when you have Blue Brute Compressors and Air Tools lined up for the work. Utility pipe lines . . . street construction and repair . . . are "naturals" for these Blue Brute Teams.

Look at Blue Brute Compressors — hard-muscled "portable cyclones" that take the roughest going . . . and come back for more. They develop full rated output right through the grind . . . and have plenty of reserve for the hard pulls. Yes, Blue Brute stamina is *built* in . . . full force-feed lubrication in engine and compressor . . . Feather* Valves for efficient air control and less maintenance . . . 3-point suspension of engine and compressor in a unitized housing cushions shocks and vibration . . . New Fuel Saver accurately regulates fuel according to demand — gives you the most air from each gallon of fuel.

Investigate Blue Brute Paving Breakers, matched partners for Blue Brute Compressors: WB-50 — a fast middleweight for the lighter jobs; WB-81 — a rapid fire heavyweight that packs terrific power; WB-85 — a super slugger that tears into *anything*.

For a combination that will keep you consistently ahead of schedule — and competition — go to your Blue Brute distributor. He'll show you the models best suited to your jobs . . . and prove to you *there's more worth in Worthington-Ransome.* H7-4

*Trade Mark Registered

KNOW YOUR BLUE BRUTES

Your Blue Brute Distributor will be glad to show you how Worthington-Ransome construction equipment will put your planning on a profitable basis. His name is listed on Page 142.

RANSOME EQUIPMENT

Pavers, Portable and Stationary Mixers, Truck Mixers, Pneumatic Placing and Grouting Equipment and Accessories.

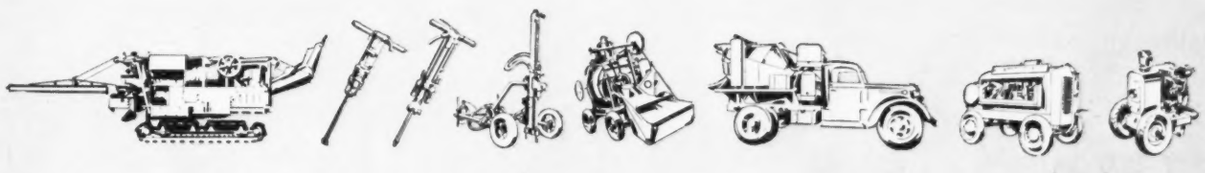
WORTHINGTON EQUIPMENT

Gasoline and Diesel Driven Portable Compressors, Rock Drills, Air Tools, Self-Priming Centrifugal Pumps and Accessories.

WORTHINGTON

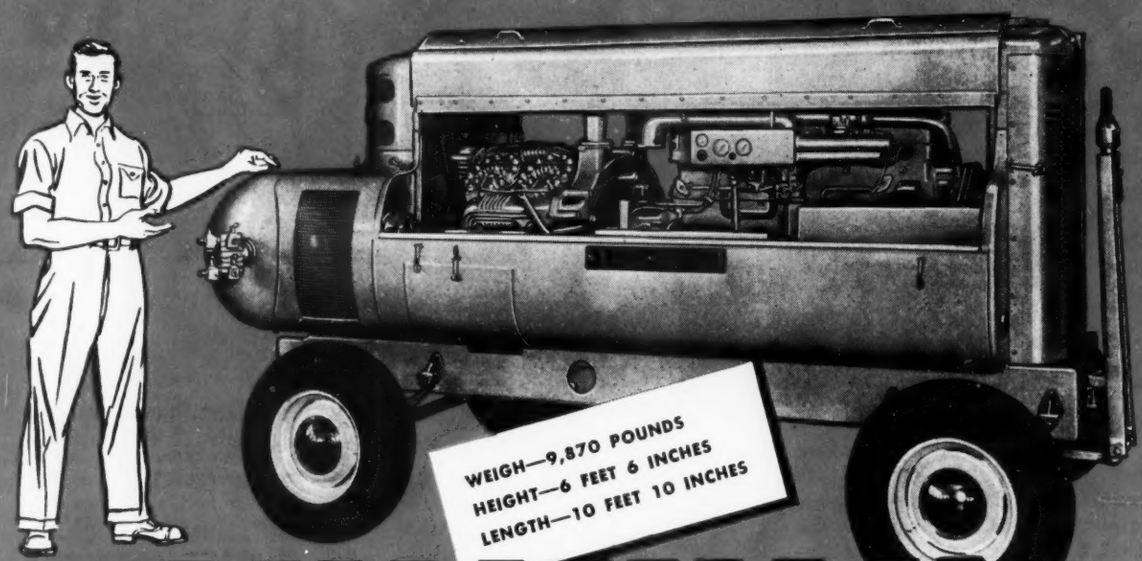
Worthington Pump and Machinery Corporation. Worthington-Ransome Construction Equipment Division, Holyoke, Mass.

BUY BLUE BRUTES



IF IT'S A CONSTRUCTION JOB, IT'S A BLUE BRUTE JOB

NOW... AMAZING
COMPACTNESS
IN A 630 c.f.m. PORTABLE



WEIGH—9,870 POUNDS
HEIGHT—6 FEET 6 INCHES
LENGTH—10 FEET 10 INCHES

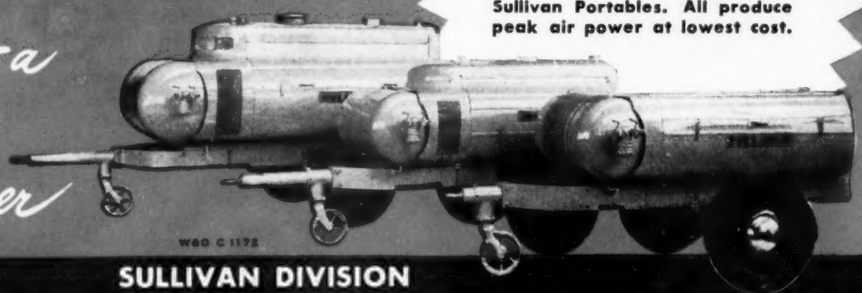
SULLIVAN
IS FIRST AGAIN!

Here's a rugged, compact, *really* portable compressor that's the result of war-born research in design and materials. There's nothing on the market of comparable size and weight that can give the same cost-saving performance! (It will run two heavy wagon drills at top efficiency.) Econo-Miser automatic load control assures economy.

A COMPLETE LINE OF PORTABLES 60 TO 630 C.F.M.

Compare sizes! Left to right below—315, 105 and 60 c.f.m. Sullivan Portables. All produce peak air power at lowest cost.

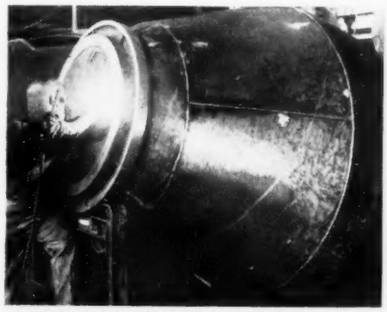
Consult a Joy Engineer



W&O C 1172

SULLIVAN DIVISION
JOY MANUFACTURING CO.
GENERAL OFFICES: HENRY W. OLIVER BLDG., PITTSBURGH, PA.

ARC WELDED CONCRETE MIXERS—New 8-cu. yd. concrete mixer is 86 in. in diameter. It is constructed of four plates of ¼-in. carbon steel,



General Electric Co. Photo

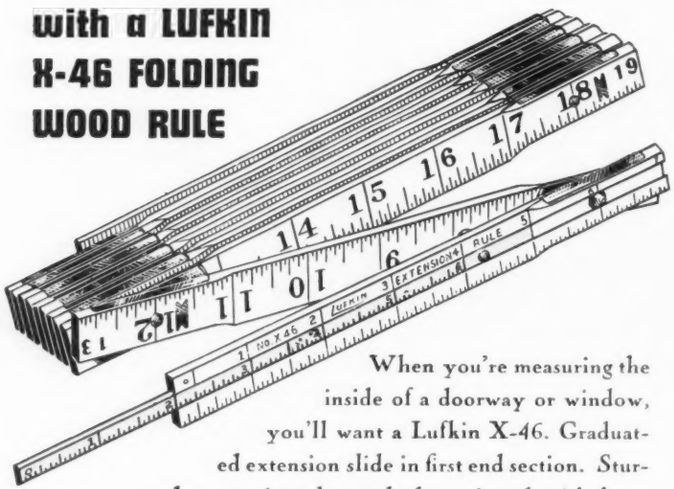
sheared and formed in plant and welded in special welding fixture. For added strength, entire discharge end is double-butt-welded (illustrated).—**Jaeger Machine Co., Columbus, Ohio.**

MASONRY WATERPROOF — New substance called Agraseal has been perfected to protect and seal all porous masonry surfaces. Material also beautifies surfaces, is available in white, ivory cream, light buff, natural stone gray, sunny yellow and light green. Applied with ordinary scrub brush, material penetrates deep into open pores. When it sets, positive seal is established. **—Tamms Silica Co., 228 N. LaSalle St., Chicago 1, Ill.**

GASOLINE TRACTOR — Compact utility tractor made by Lincoln Tractor Co., of Arcadia, Calif., has 6-hp. aircooled engine with pressurized lubrication. Engine weighs 56 lb. and occupies only 1⅛ cu. ft. of space. Tractor has all-steel welded frame,

pivoted front axle suspension, individual rear wheel brakes to facilitate turning and transmission providing three forward speeds and two power takeoffs. Power takeoffs provide ready source of power for operating mixers, pumps, generators and saws. — **Salsbury Motors, Inc., Northrop Aircraft, Inc., 1201 E. Lexington St., Pomona, Calif.**

make your work easier with a LUFKIN X-46 FOLDING WOOD RULE



When you're measuring the inside of a doorway or window, you'll want a Lufkin X-46. Graduated extension slide in first end section. Sturdy, prominently marked, equipped with brass strike plates, ideal for general measuring work too. Ask your dealer for the Lufkin X-46 Folding Wood Rule. Write for free catalog.

LUFKIN

THE LUFKIN RULE CO., SAGINAW, MICHIGAN, New York City

ETNYRE

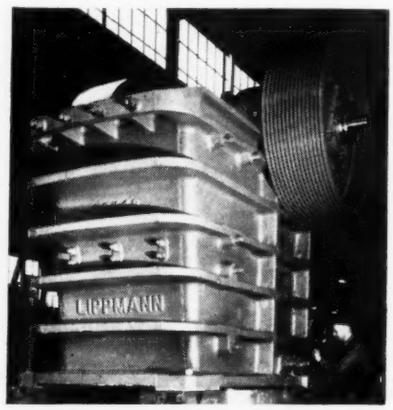
"Black-Topper"

BITUMINOUS DISTRIBUTORS

ACCURATE...DEPENDABLE...ECONOMICAL In new road construction or in making those much needed road repairs you'll find an Etnyre "Black-Topper" accurate in distribution, dependable in performance, low-cost in operation. See your Etnyre dealer or write us today for complete details.

E. D. ETNYRE & CO., Oregon, Illinois

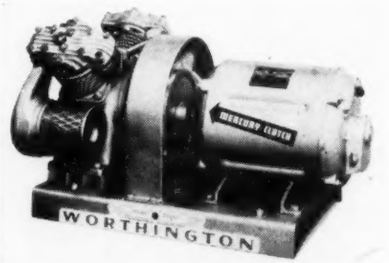
JAW CRUSHER—Said to be world's largest overhead eccentric jaw crusher, new unit has hard rock capacity of 210 tons per hour at 3-in. discharge opening. It stands 11 ft.



high, and weighs 84,000 lb. Movable jaw is 10 ft., 10 in. high, and weighs 35,000 lb. Range of discharge opening is 2 to 8 in.—**Lippman Engineering Works, Milwaukee, Wis.**

FIRE EXTINGUISHER — Splash-proof Foamite Firefoam for vehicle service has sealed stopper construction built into top which prevents chemicals from mixing until needed. It produces fire-killing chemical foam equal to approximately 10 times its own capacity and stops oil and gasoline fires and prevents re-flashing. It has monotype seamless drawn shell construction and is tested to 550 psi. With stream range from 35 to 40 ft., foam can reach fires beneath truck body as well as all other surfaces. — **American La-France-Foamite Corp., Elmira, N. Y.**

AUTOMATIC CLUTCH — Mercury-actuated clutch makes possible automatic starting of air compressors. It permits driving motor to attain full speed before compressor turns, eliminating need for pressure release



valves. Mercury is used as control medium because of its high specific gravity. Centrifugal force acting on small amount of mercury produces hydraulic pressure which is utilized, without levers or other mechanical means, to cause engagement of friction elements of clutch. — **Mercury Clutch Corp., Canton 6, Ohio.**

says Combs Construction Company, Chattanooga, *about* MICHIGAN

This MICHIGAN owner, in a letter to Nixon Machinery & Supply Co., Chattanooga, goes on to say

". . . we have never gone wrong buying equipment that you recommend. Your claims were, if anything, conservative.

"We have used our MICHIGAN as shovel, back hoe, clam, dragline and in steel erection as a crane. In all operations it has proven a very efficient and economical machine. Operating and maintenance costs have been extremely low. Its mobility and flexibility, plus its other features has convinced us that it is an essential part of our equipment fleet.

"We recommend the MICHIGAN Model T-6-K, without reservations, for any work within its capacity."

Full details about the complete line of 3/8 yd. and 1/2 yd. convertible MICHIGAN Mobile SHOVEL-CRANES are available on request.

MICHIGAN
POWER SHOVEL COMPANY
BENTON HARBOR MICHIGAN

MOBILE • COMPACT •
RUGGED *and* FAST

CLEVELANDS

DELIVER MAXIMUM TRENCH FOOTAGE
AT MINIMUM COST—

for TRENCHING

OIL
GAS
GASOLINE } LINES
SEWER
WATER

DRAINAGE (FARM OR FIELD)
TELEPHONE OR TELEGRAPH CONDUITS
BUILDING FOUNDATIONS

THE CLEVELAND TRENCHER CO.
20100 ST. CLAIR AVENUE • CLEVELAND 17, OHIO

New PUBLICATIONS From MANUFACTURERS

The catalogs and bulletins reviewed below will keep you posted on latest developments in construction equipment and materials available for your use

ADMIXTURE FOR READY-MIXED CONCRETE — (2-p. bulletin) Describes how Trimix, multi-purpose liquid admixture, is used in manufacture of ready-mixed concrete.— **Building Products Division, L. Sonneborn Sons, Inc., 88 Lexington Ave., New York 16, N. Y.**

OIL-FIELD ELECTRIFICATION— (109-p. textbook) Covers electrical equipment and methods in oil-producing and pipeline industries.— **General Electric Co., Schenectady, N. Y.**

VAPOR STEAM CLEANING MACHINE—(4-p. folder) Describes new Model No. 46B for cleaning trucks, buses, automobiles, road and construction machinery, railroad, marine and general industrial equipment.— **White Engineering & Mfg. Co., Inc., 66 W. Passaic St., Rochelle Park, N.J.**

TRUCKS—(8-p. book) Describes 10- and 12-ton trucks, built for heavy-duty service. — **Four Wheel Drive Auto Co., Clintonville, Wis.**

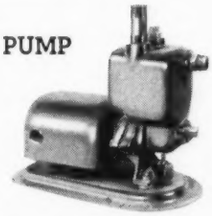
BRICKMAKING MACHINE — (8-p. bulletin) Describes new Brickmaster which can produce 3,000 to 6,000 standard-size units per hour. Illustrations show machine at work, bricks produced, and construction details. — **Brickmaster, Inc., 115 Broadway, New York 6, N. Y.**

LARGE FORGED NUTS—(6-p. folder) Describes facilities for manufacturing large forged nuts in any thread and finish and illustrates hydraulic pressed and flat die forging facilities.—**Jos. Dyson & Sons, Inc., 5125 St. Clair Ave., Cleveland 14, Ohio**

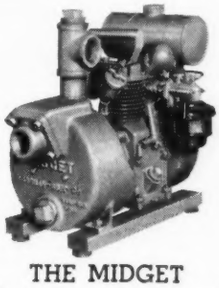
ASPHALT — (12-p. booklet) Describes and gives advantages of Permacote. It is profusely illustrated with charts and graphs.—**Berry Asphalt Co., 120 S. LaSalle St., Chicago 3, Ill.**

PUMPS - *Engineered to Do the Job!*

THE HANDY PUMP



Fitted with pipe or common garden hose, this pump will lift water up to 25 feet. Delivers 8 gal. per min. at 40 lbs. pressure. Electric motor driven -- self priming -- weighs only 27 lbs.



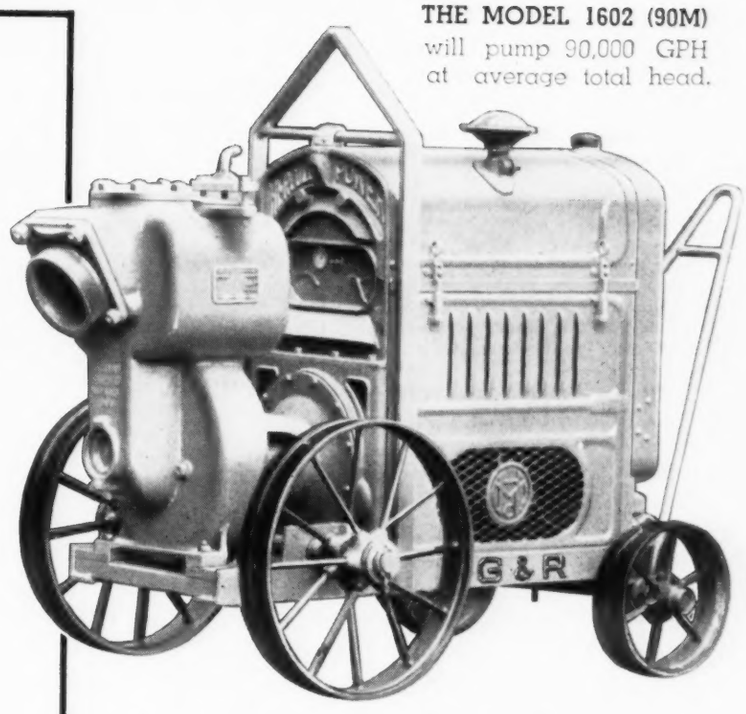
THE MIDGET

The Midget can do hundreds of handy pumping jobs. 3000 GPH at 20 ft. head, 5 ft. suction lift; -- and it weighs only 60 lbs.

THE NEW ODORLESS SANITARY CLEANER (O. S. C.)

A modern apparatus for cleaning septic tanks, vaults and cisterns. Shipped complete ready to mount on standard truck chassis, 158 to 161 in. length. Septic tanks of 1000 gallon capacity cleaned in 20 minutes. Approved by public health officials. Write for bulletin 7-ST-11.

THE MODEL 1602 (90M)
will pump 90,000 GPH at average total head.



Gorman-Rupps are the simplest, most rugged design of any self-priming centrifugal pump made. They are engineered to give the best performance possible under any and all conditions and to assure continuous trouble-free service for a long period of time.

Faster Priming -- more efficient -- just start the motor and you start the water without making any adjustments.

Will not clog -- nothing to cause stoppages -- no valves, vents or ports -- no tubes -- no orifices -- no clean-out plates.

Whatever the size or application from 3000 GPH up to 25,000 GPH you can do the job more profitably with a dependable Gorman-Rupp Blue Pump.

Write for further information or contact your nearest distributor.

THE GORMAN-RUPP COMPANY
GORMAN-RUPP PUMPS — UNSURPASSED FOR PUMPING FAST
308 N. BOWMAN STREET • MANSFIELD, OHIO

VULCAN

GREATER PENETRATION per Blow

BRUTE power — that's Super-Vulcan. It gets greater penetration with every blow, sinking piles rapidly with twice the usual number of blows per minute on 25 to 35 per cent less steam.

On the job, where claims give way to facts, the Super-Vulcan proves its exceptional value, dependable performance and positive action. Its simple design and rugged strength, together with compactness for easier operation, produce savings in time, maintenance and money. For details on this plus performance, write Vulcan today.

SUPER-VULCAN OPEN TYPE DIFFERENTIAL ACTING PILE HAMMERS

18C, 30C, 50C AND 80C

VULCAN IRON WORKS Since 1852

331 North Bell Avenue

Chicago 12 ---Illinois

TRUCKS — (Free magazine) Job-Rater will provide factual and diversified information for truck owners and operators about trucks and their application and will deal with cost-reducing truck operations, economical truck maintenance, and efficient truck service. — **Dodge Division, Chrysler Corp., Detroit 31, Mich.**

DIESEL ENGINES — (Two 8-p. pamphlets) Give complete specifications for UD-14A and UD-18A diesel engines and power units. Bearing areas, moments of inertia, material specifications, and dimensions are listed.—**International Harvester Co., 180 N. Michigan Ave., Chicago 1, Ill.**

CLAY PRODUCTS—(Bulletin) Carries dimensions and specifications of sizes and fittings of various clay products widely used. — **Robinson Clay Products Co., Akron, Ohio**

TANK JACKS—(Engineering data bulletin) Includes complete specification charts, selection guide data and price listings on jacks for supporting and leveling tanks.—**Templeton, Kenly & Co., 1020 S. Central Ave., Chicago 44, Ill.**

VIBRATORS AND GRINDERS—(32-p. catalog) Contains up-to-date information on vibration of concrete, together with illustrations and complete description of new vibrator machines in Wyco line, including new jackshaft double V-belt drive units. —**Wyzenbeek & Staff, Inc., 838 W. Hubbard St., Chicago 22, Ill.**

WELDERS — (Technical bulletin) Describes new line of standard pedestal spot welders with complete specifications, drawings, and detail as well as general photographs.—**Progressive Welder Co., 3050 E. Outer Drive, Detroit 12, Mich.**

CONVEYOR BELTS—(4-p. catalog section) Features guide on selection of grades needed for specific services and gives details of each of its brands and special construction available in various belts.—**B. F. Goodrich Co., Akron, Ohio**

LUBRICANT RESEARCH — (24-p. booklet) Gives picture story of research program for developing improved industrial lubricants. Forty-eight photographs show advanced lubricant research devices, including pilot plants, endurance testing machines, micro-laboratory equipment, electron microscopes and spectrometers.—**3800 Gulf Building, Pittsburgh 30, Pa.**

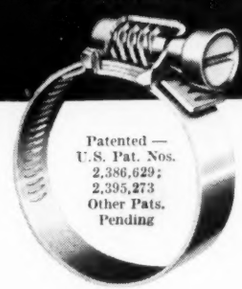
WHY "Aero-Seal"

T.M. Reg. U.S. Pat. Off.

WORM DRIVE

HOSE CLAMPS

WILL SAVE YOU MONEY



RUGGED!

Sturdily built. Stainless steel or carbon spring steel. Rust resistant. Mechanically interlocked saddle. Worm gear drive. No loose parts. Vibration-proof. Unaffected by high or low temperatures and pressures. Uniform "squeeze" on hose. Greater band strength.

FASTER TO INSTALL!

Save time. Easily installed. No need to remove hose. Self-locking. Will not collapse thin wall hose.

REDUCE MAINTENANCE COSTS!

They "stay put". Leak-proof. Extra long take-up. Reduce inventory requirements. Keep equipment on the job. Use them for all air, fuel and coolant lines on trucks, tractors, pumps, mixers, compressors, power shovels, motor graders, etc. Write for FREE SAMPLE. You'll like "Aero-Seal".

AIRCRAFT STANDARD PARTS CO., INC.

1715 19th Avenue

Rockford • Illinois

READ WHY A TRUCK LIKE THIS

CAN SAVE YOU MONEY!

This truck—like every Dodge "*Job-Rated*" truck—is built to fit a specific hauling job.

It's powered with exactly the right one of 7 engines—plus the right gear ratio—to provide the pulling power the job requires, with maximum economy.

It's built with exactly the right clutch, transmission, rear axle—the right units throughout . . . for "top" performance, longer life, and maximum economy . . . on the job for which it was built.

It stands to reason that a truck "*Job-Rated*" to haul *your* loads over *your* roads —will save YOU money!

You can get a truck to fit *your* job—a truck to give better performance, better service to your customers, and to save you money!

Simply explain your hauling problems in detail to your Dodge dealer. He has the engineering data from which to recommend the best truck investment you can make.

★ ★ ★

Your Dodge dealer is interested in your continued satisfaction: *First*, by selling you a truck that fits your job; *Second*, by giving you dependable Dodge truck service; *Third*, by providing you with truck parts that are identical with original Dodge "*Job-Rated*" truck parts.

ONLY DODGE BUILDS "*Job-Rated*" TRUCKS

DODGE

Fit the Job . . . Last Longer !

NOW Rolled from Alloy or Mild Steel

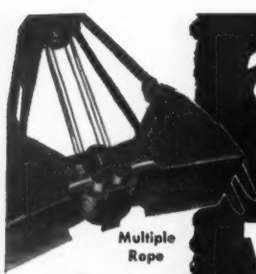
Caine CORR-PLATE Steel Piling

Rolled from a new steel alloy, Caine Corr-Plate is now 25% stronger and has nearly 100% greater corrosion resistance. This alloy makes available equal strength and nearly double the life in a 25% lighter piling. Approved by Highway Departments and U. S. Engineers.

Caine Corr-Plate Steel Piling has been used the world over for Foundations, Dams, Retaining Walls, Docks, Levees, Bulkheads, Sewers, Disposal Plants and hundreds of other jobs—it's stronger, lighter, nestable, easy to drive and water tight; can be re-used again and again.

Doubled life and 25% greater strength make Caine Corr-Plate Steel Piling the bargain buy in piling!

NOW, MORE THAN EVER BEFORE . . .
STRONGEST PER POUND WEIGHT
CAINE STEEL COMPANY
STEEL PILING DIVISION, 1820 N. Central Avenue, Chicago 39, Illinois



Welded Construction
MAKES A BIG DIFFERENCE...

WELLMAN
Williams Type **BUCKETS**

• Wellman leads the field in welded bucket construction. Wellman improved design means *better service, lower cost for you!* A type for every purpose: Multiple Rope, Power Arm, Dragline, Power Wheel. Special Service: ⅜ to 16½-yd. capacity.

SEND FOR BULLETIN

THE WELLMAN ENGINEERING COMPANY
7017 CENTRAL AVENUE • CLEVELAND 4, OHIO

PLYWOOD PANEL — (Illustrated brochure) Describes Weldtex, plywood with striations in panel to relieve surface tension, minimizing expansion and contraction. — **United States Plywood Corp., 55 W. 44th St., New York 18, N. Y.**

LUMBER AND WOOD USING INDUSTRIES — (12-p. bulletin) Describes research facilities for improving present wood products and developing new uses. Company's laboratory facilities are outlined, with partial listing of 25 different fields of research carried on for individual companies and trade associations. — **Timber Engineering Co., 1319 18th St., Washington 6, D. C.**

METAL FRAMING AND CONCRETE INSERTS—(Six bulletins) Cover various products of company, including: (1) adjustable steel framing; (2) bar stock and tubing storage racks; (3) concrete inserts ranging in length from 3 in. to 20 ft.; (4) all-purpose metal framing; (5) roller pipe supports, which will accommodate all sizes of pipe from 1 to 12 in. in one assembly by using different length axles; and (6) pipe clamps and cable clamps.—**Unistruct Products Co., 1013 W. Washington Blvd., Chicago 7, Ill.**

WALL AND FLOOR FORMS—(Two 4-p. folders) Describe and illustrate how construction can be carried out on wide variety of typical projects with steel form units or in large panels handled by crane. Plans show simplicity of layout with new system of steel forms.—**Irvington Form & Tank Corp., Irvington, N. Y.**

BULK CEMENT CONVEYING — (24-p. bulletin) Describes and illustrates, with photographs and drawings, use of Fuller-Kinyon stationary pump, remote-control unloader and rotary compressor. — **Fuller Co., Catasauqua, Pa.**

PRECISION INSTRUMENTS—(116-p. catalog) Contains descriptions and specifications for levels, transits, jig collimators, transit-theodolites, alidades and plane tables. Cross-section drawings and photographs are included.—**C. L. Berger & Sons, Inc., 37 Williams St., Roxbury, Boston 19, Mass.**

ROAD MAINTENANCE KETTLE—(Illustrated folder) Describes 84-HD kettle, as well as Model No. 101 utility spray tank, motorized portable Trail-O-Roller, and emulsion sprayers.—**Littleford Bros., Inc., 457 E. Pearl St., Cincinnati 2, Ohio.**

REHANDLING BUCKETS — (8-p. bulletin) Describes E-16 rehandling clamshell bucket and economies it makes possible. It shows how bucket can be adapted for excavating, mud work, dredging and other services. Chart lists bucket load capacities, weights and dimensions in terms of various materials handled, together with figures on recommended wire rope diameters, reeving and closing lengths.—**Hayward Co., 50 Church St., New York 7, N. Y.**

AIR COMPRESSOR LUBRICATION —(40-p. booklet) Gives helpful information on care of various types of compressors and their auxiliary equipment. — **Petroleum Advisers, Inc., 60 Wall Tower, New York 5, N. Y.**

DRAGLINE AND CRANE — (12-p. bulletin) Describes new 1¼-cu. yd. Type 71 with air control and air-cushion clutches. It is available as both crawler and wheel-mounted machine.—**Osgood Co., Marion, Ohio.**

BLOWERS — (8-p. booklet) Shows numerous rotary positive and centrifugal installations in typical sewage disposal plants.—**Roots-Connersville Blower Corp., 900 W. Mount St., Connersville, Ind.**

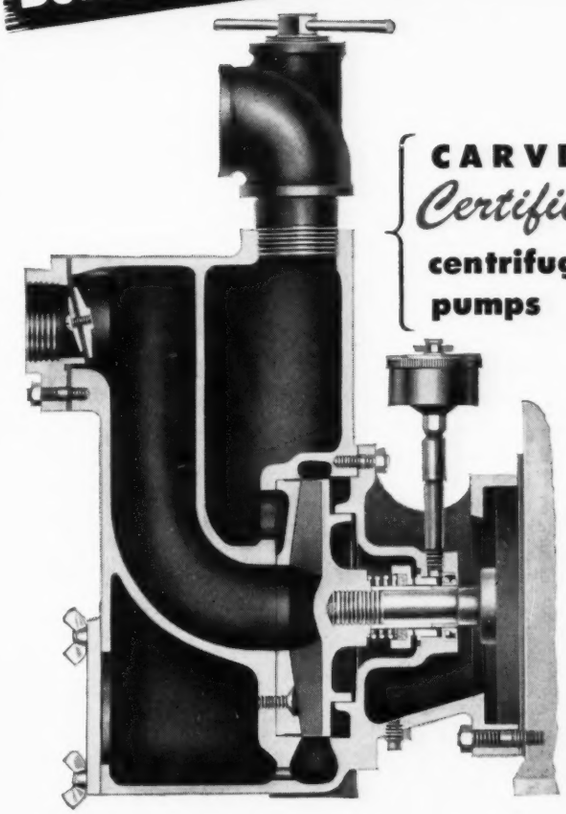
EARTH BORING MACHINE—(16-p. bulletin) Describes three new compressed-air operated models 10-A, L-2, and LHH-2.—**Hydrauger Corp., Ltd., 116 New Montgomery St., San Francisco 5, Calif.**

PROTECTIVE COATINGS — (4-p. catalog) Lists features of Prufcoat and chemical agents it resists, as well as uses and complete application information. — **Prufcoat Laboratories, Inc., 63 Main St., Cambridge 42, Mass.**

LUBRICATION PROBLEMS IN STRIP MINING—(Illustrated booklet) Describes use of specifically recommended lubricants in earth-moving equipment. Panoramic and close-up photographs show this equipment at five Pennsylvania strip mines where Swan-Finch oils are used.—**Swan-Finch Oil Corp., R.C.A. Building West, New York 17, N. Y.**

ACETYLENE GENERATOR—(22-p. catalog) Lists and explains complete line of Airco acetylene generators, both stationary and portable, outlining advantages of each. It also covers Airco manifolds, both oxygen and acetylene.—**Air Reduction Sales Co., 60 E. 42nd St., New York 17, N. Y.**

Here's the Inside Story of Better Pumping Performance



CARVER *Certified* **centrifugal pumps**

★ High Capacity at high suction lift.

★ High Efficiency at high pressures and at slow speeds.

★ Non-Recirculating—no priming gadgets.

★ Life-Time Seal — wearing surfaces are almost diamond-hard.

★ Fewer Working Parts because of simple design.

★ Non-Clogging — streamlined design.

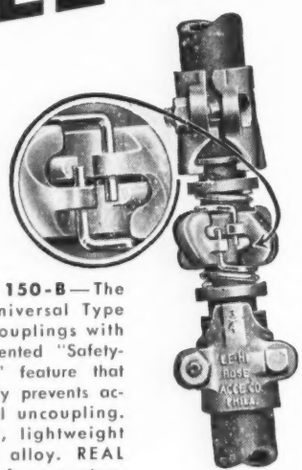
★ Performance of each pump is *certified.*

Capacities from 3000 to 200,000 GPH. Sizes 1½" to 10". Ask for Bulletin 101-A. Carver Pump Co., Muscatine, Iowa.

CARVER PUMPS *Muscatine Iowa*

ASK FIRST FOR LE-HI

Series 650 Type BC —Brass Combination Male Hose Nipple, the ideal nipple connection for petroleum products, for salt water and certain corrosive liquids. Sizes 1" to 6" I.P.T.



Series 150-B—The only Universal Type Hose Couplings with the patented "Safety-Locking" feature that positively prevents accidental uncoupling. Rugged, lightweight bronze alloy. REAL SAFETY for operators. Interchanges and locks with other standard couplings. Hose sizes ½", ¾" and 1".

BRASS HOSE COUPLINGS

Series 800—Brass Suction or Water Discharge Hose Coupling—Pin Lug Type. For hose sizes from 1¼" to 6" I.P.T. Also made in Garden or Heavy Duty Water Hose sizes ½" to 1" with hexagon or octagon swivel nut.

LE-HI MAKES A GOOD CONNECTION!

Ask your local distributor for these tough, dependable LE-HI Hose Couplings — NEVER SOLD DIRECT.

LE-HI HIGH and LOW PRESSURE HOSE COUPLINGS

HOSE ACCESSORIES CO.
2738 North 17th Street
Philadelphia 32, Pennsylvania

LUBRICATING SYSTEMS — (8-p. booklet) Gives representative case histories of use of centralized lubrication, demonstrating its economies and efficiency.—**Farval Corp., 3249 E. 80th St., Cleveland 4, Ohio.**

PORTABLE COMPRESSORS—(4-p. bulletin) Includes photos and detailed mechanical specifications of 60-105-160-210-315 c.f.m. capacity machines.—**Davey Compressor Co., Kent, Ohio**

ROTARY DUMPERS—(20-p. book) Covers various types of mine car dumpers, car feeder haulage, and railroad car dumpers. — **Link-Belt Co., 300 W. Pershing Rd., Chicago 9, Ill.**

LUMBERMEN'S DIRECTORY—(12-p. revised edition) Lists leading sawmill and remanufacturing plants, loggers, wood pipe, wood treating and prefabricating companies of Pacific Northwest. It details equipment used by each company, species of lumber offered, and products manufactured. — **West Coast Lumbermen's Association, 1410 S.W. Morrison St., Portland 5, Ore.**

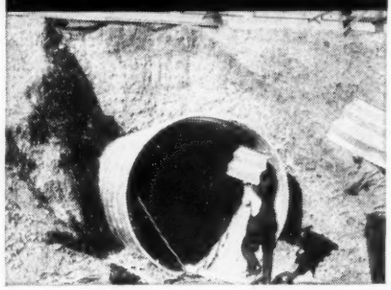
GEARS—(24-p. catalog) Describes, in pictures, blueprints and text, various types and sizes of gears and special machinery.—**Earle Gear and Machine Co., 4707-17 Stenton Ave., Philadelphia 44, Pa.**

LINEMEN'S EQUIPMENT — (30-p. manual) Presents safety practices for electric utility linemen, with emphasis on the correct use and care of their pole climbing equipment. It covers recommended methods for handling and maintenance of body belt, safety strap, climbers, leg strap and other aids.—**Edison Electric Institute, 420 Lexington Ave., New York 17, N. Y.**

MAGNETIC CLUTCHES — (20-p. catalog) Provides complete text book on magnetic clutch application and contains specifications, illustrations, torque formulas and other valuable information on magnetic friction device control. — **Stearns Magnetic Mfg. Co., Milwaukee 4, Wis.**

BUILDING WITH WOOD — (40-p. pictorial booklet) Presents wide range of light and heavy frame wood structures employing Teco connector system of construction, Lamella construction, and glued laminated construction—**Timber Engineering Co., 1319 18th St., N.W., Washington 16, D. C.**

"HOLE THROUGH" ahead of schedule



Have you heard about ARMCO Tunnel Liner Plates for faster, more economical tunneling? Here's the simplest, most inexpensive way you ever saw to install new sewers and other underground structures.

These sturdy, corrugated liner plates are designed to assure safe strength without excessive bulk or weight. One man can easily handle the light-weight steel sections, bolting them together with ordinary wrenches. Costs are low and the work moves fast.

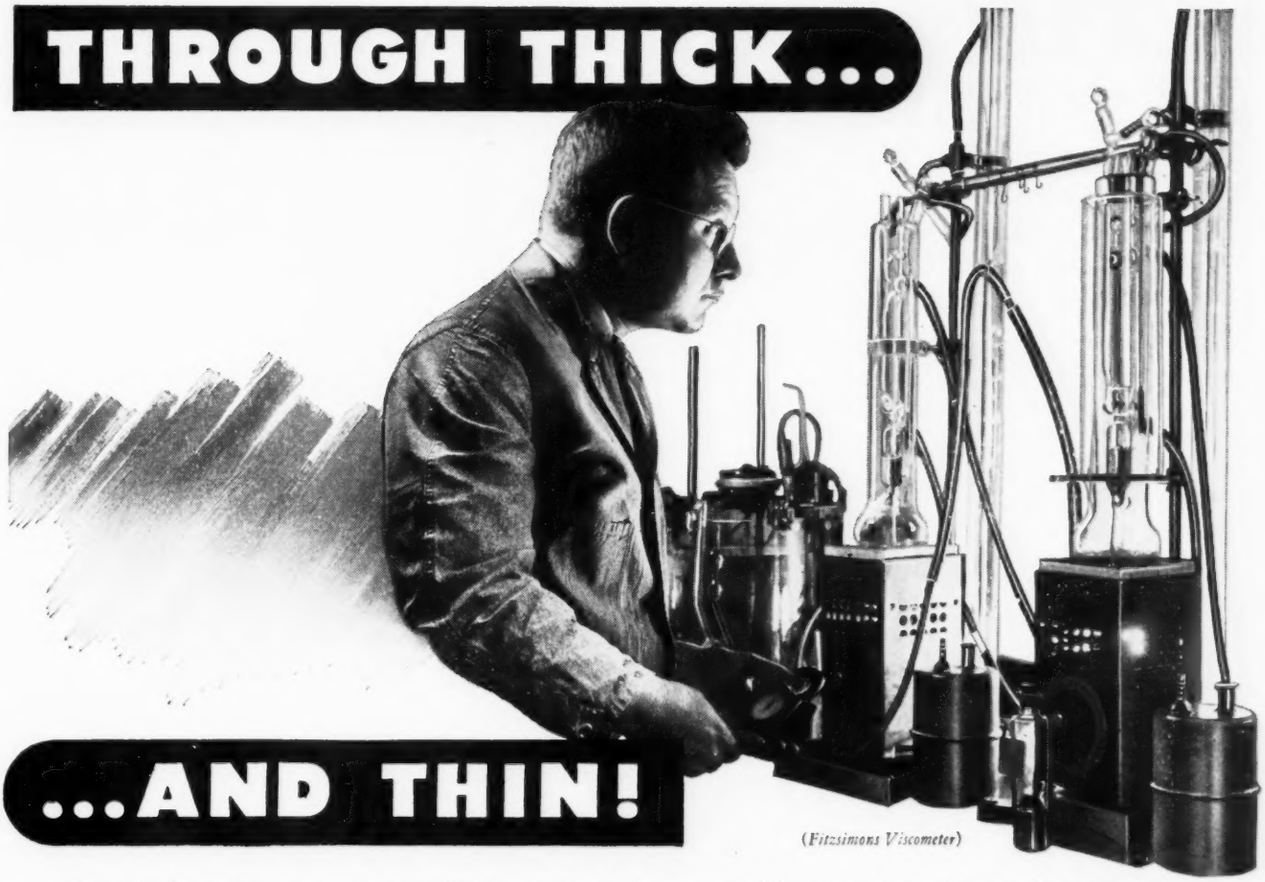
With ARMCO Liner Plates you gain added safety, fire protection and avoid the delays, hazards and inconveniences of open trenching. Business above ground continues as usual. And because you buy *sinewy strength* — not bulky pounds — there is less excavation, and storage requirements are smaller.

Consider tunneling that next job with the aid of ARMCO Liner Plates. Motorists and property owners will thank you and the chances are you'll "hole through" ahead of schedule and under the estimate. Write for complete information. Armco Drainage & Metal Products, Inc., 2735 Curtis Street, Middletown, Ohio.

ARMCO

ARMCO TUNNEL LINER PLATES

THROUGH THICK...



...AND THIN!

(*Fitzsimons Viscometer*)

Horatio Alger heroes never struggled harder than do research laboratory technicians today. The intent scientist above is a Sinclair Research technician . . . a skilled specialist at determining how thick or how thin Sinclair lubricating oils must be for specific applications.

With the important Fitzsimons Viscometer, a research measuring apparatus of fine precision, Sinclair Laboratory experts are able to determine with extreme accuracy viscosity characteristics in their studies of lubricants needed to protect your valuable machinery. Precise, accurate flow measurement provides information important in the development of improved products for correct lubrication with light-bodied oils for today's precision-built engines and machinery.

This viscometer is one of several different types with which Sinclair Research goes through thick and thin to assure you of industrial lubricants of proper viscosity. It is typical of the equipment and facilities which are constantly at your service in developing Sinclair lubricants of uniformly high quality to suit your specific application.

Sinclair Automotive Oils
For Bus, Truck and Tractor
OPALINE
TRUCK BUS TRACTOR
OIL
Superior lubrication in the long pull, under heavy loads
• • •
Keeps engines clean . . .
Sustains top engine performance

SINCLAIR REFINING COMPANY • 630 FIFTH AVENUE, NEW YORK 20, N. Y.

SINCLAIR

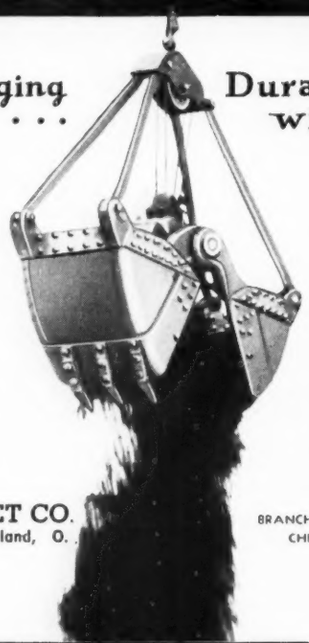
Lubricants for Industry

FINEST CRUDES + EXPERT RESEARCH and MANUFACTURING CONTROL = OUTSTANDING PERFORMANCE

Owen SELLS "IN-BUILT" PERFORMANCE

Distinctive Digging Features . . . . .

Deep penetration by bucket teeth – Balance maintained during digging–Undiminished closing power – Shells closed with maximum leverage – Adjustable closing speed – Easy complete discharge.



Durability . . . . . with Long Life

Rigid shell construction–High carbon alloy steel teeth – Dropping shocks absorbed by Owen patented stops– Sealed grit-proof center shaft bearings–Protected cables and sheaves– Lever type arm bracket exert maximum leverage in forcing shells into the material.

THE OWEN BUCKET CO.
6020 Breakwater Ave., Cleveland, O.

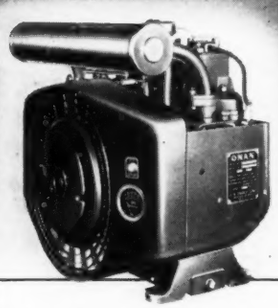
BRANCHES: NEW YORK, PHILADELPHIA, CHICAGO, BERKELEY, CALIF

OWEN CLAMSHELL BUCKETS INSURE A BIGGER DAY'S WORK

A MOUTHFUL AT EVERY BITE

SMOOTH POWER Two-Cylinder

The NEW ONAN AIR-COOLED 10 H.P. 4 CYCLE "CK" ENGINE



A new, light, compact, easily-installed engine of wide power range. Completely "De Luxe" equipped, easy-to-get-at controls, and many other *plus* points. Prompt delivery on early orders.

ONAN ELECTRIC PLANTS—A.C.—350 to 35,000 watts in standard voltages and frequencies; D.C.—600 to 10,000 watts, 115 and 230 volts. Battery chargers—500 to 6,000 watts, 6, 12, 24, 32 and 115 volts. ONAN AIR-COOLED ENGINES—CK: 2-cylinder opposed, 10 h.p.; BH: 2-cylinder opposed, 5.5 h.p.; IB: 1-cylinder, 2.5 h.p.

- **HEAVY-DUTY CONSTRUCTION:** Short, sturdy crankshaft. Extra-large bearings.
- **SMOOTH POWER:** Opposed 2-cylinder design. Fully counter-balanced crankshaft.
- **SUPER COOLING:** Axial-flow fan delivers 600 cu. ft. of cool air per minute. Larger fin area.
- **ALUMINUM CONSTRUCTION:** High-strength aluminum castings reduce weight.
- **ELECTRIC STARTING AVAILABLE:** Built-in electric push-button or automatic starting.
- **COMPACT, LIGHT WEIGHT:** Fits into 15 x 19 x 18 inch space. Weighs only 97 pounds.

Onan PRODUCTS

WRITE FOR SPECIFICATIONS

D. W. ONAN & SONS INC.
4957 Royalston Ave. Minneapolis 5, Minn.

ONAN 4-Cycle ENGINES

EQUIPMENT MEN
and Their Companies

The Galion Iron Works & Mfg. Co., Galion, Ohio, manufacturer of motor graders and rollers, reports the promotion of **G. D. Finney** (left) from assistant sales manager to

sales manager of the company's western and southern divisions. **Robert C. Monnett** (right) has been appointed sales manager of the eastern and central divisions of the company.

The Swan-Finch Oil Corp. has appointed **B. C. Price** vice-president in charge of manufacturing.

Link-Belt Co., Chicago, Ill., announces the appointment of **Robert C. Becherer** as plant manager of the Ewart plant in Indianapolis, where conveyor and drive chains are made. **Warren H. Maxwell** has been appointed general superintendent, **S. L. Houck** becomes assistant general superintendent and **Carl O. Schopp** has been appointed superintendent of the Ewart plant foundry.

Rogers Brothers Corp., Albion, Pa., has just announced important changes in its top organization personnel: **Harrison J. Rogers** has been elected vice-president and general manager. He will also continue to function as sales manager. **Leo Brennan** is controller and assistant secretary and **Paul Sheehan** is purchasing agent.

Appointment of Beckwith Machinery Co., Pittsburgh, Pa. to handle Marlow pumps to the construction and strip mining industries was recently announced by the Marlow Pump Co., Ridgewood, N. J., through Harris Pump and Supply Co., their Pittsburgh distributors.

H. C. Wallace has been appointed manager of Air Reduction's Louisville district, succeeding R. S. Moore, recently deceased.

Appointment of **W. T. McCurdy** as district manager for the states of Tennessee and Arkansas is announced by Mack Trucks, Inc. He will supervise all of Mack's activities in these two states, including a dealer organization composed of twenty-one outlets. His direct sales efforts will be focused particularly on off-highway trucks and fire apparatus.

Appointment of **W. C. Snyder, Jr.,** as a vice-president in the engineering and construction division of Koppers Co., Inc., Pittsburgh, Pa., is announced. He succeeds John F. Byrne, vice-president, who was killed in an airplane crash.

William T. (Bill) Kennedy has assumed duties as sales representative for the American Hoist & Derrick Co. in the Southwest territory. He will make his headquarters at Houston, Texas.

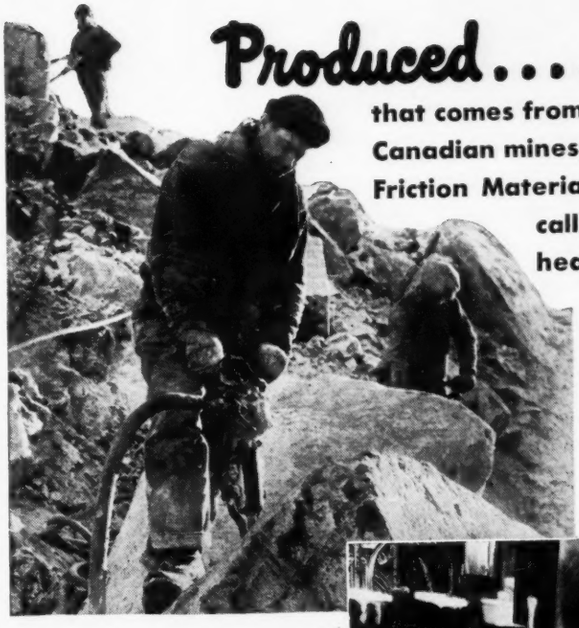
C. E. Lovewell, chief engineer for The Carney Co., Inc., Mankato, has been named director of sales for the company's cement division and **C. H. Carlson** has been promoted to manager of sales for the insulation division.

To meet increasing demands of industry for quick, efficient service on roller transmission chains, the Atlas Tool and Designing Co. of Philadelphia, has changed its charter to the Atlas Chain and Manufacturing Co.

The Youngstown Sheet & Tube Co., announces the appointment of **G. W. Christopher** as manager of standard pipe sales and **J. W. Owings** as manager of oil country tubular sales.

W. E. Kimbrough has been appointed manager of the truck section of the Ford Motor Co. He will be located at the central office in Dearborn.

Assignment of Permanente Cement Co., as operator of Pacific Coast Cement Co., Seattle, Wash., plant facilities has been announced. As lessor of the Northwestern cement facilities, General Construction Co. has arrived at satisfactory terms by which the Permanente Cement Co. will manufacture cement at the Seattle plant through February, 1948.



Produced . . . from asbestos that comes from J-M's own Canadian mines, Johns-Manville Friction Materials are mechanically strong, highly heat-resistant.

Tested .. in the famous J-M Research Laboratories under actual field conditions.

Specified .. by the leaders in industry everywhere!

FROM raw material to finished product, Johns-Manville controls the quality of J-M Industrial Friction Materials. That's why the highly trained buyers of most leading industrial equipment manufacturers have *standardized* on "Johns-Manville."

Stay with Johns-Manville and you're sure of the best! Contact your nearest J-M Distributor for help in selecting the proper style of J-M Friction Material . . . or write to Johns-Manville, Box 290, New York 16, N. Y.

JM

Johns-Manville

INDUSTRIAL FRICTION MATERIALS

No. 1 With Leading Manufacturers

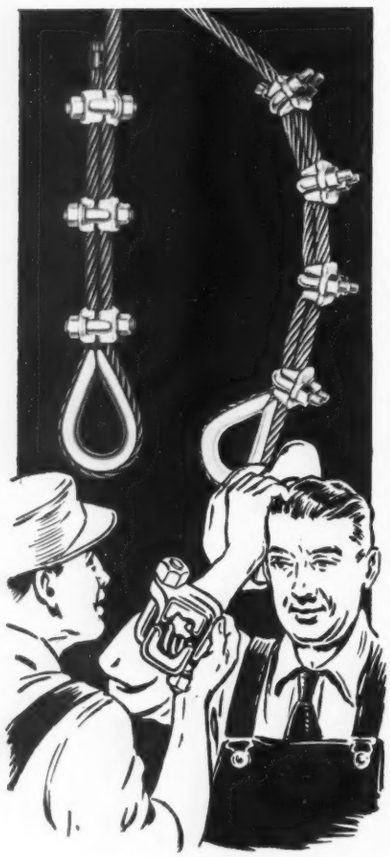
Production capacity of the Middle Branch, Ohio, mill of Diamond Portland Cement Co. will be increased 50 percent by the erection of a cement kiln by The Rust Engineering Co., Pittsburgh, Pa., under a contract recently announced.

Appointment of C. J. Fournier as manager of the Ford Motor Co.'s parts and service department for the Southwestern region has been announced.

William J. Hazeltine, formerly vice-president and sales manager of the Buffalo Springfield Roller Co. has joined the Galion Iron Works & Mfg. Co., as special representative of the roller division.

Frank E. Gerlitz, Jr. has been appointed sales manager of the Simplex Valve & Meter Co., of Philadelphia, Pa.

Charles F. Yarham, formerly an engineer with the Euclid Road Machinery Co., has joined the Ohio Equipment Co., Cleveland, which represents the Yale & Towne Manufacturing Co. in that area.



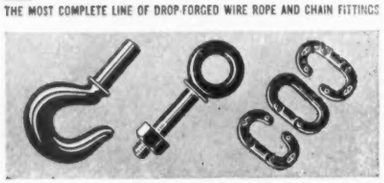
"Get This Straight"

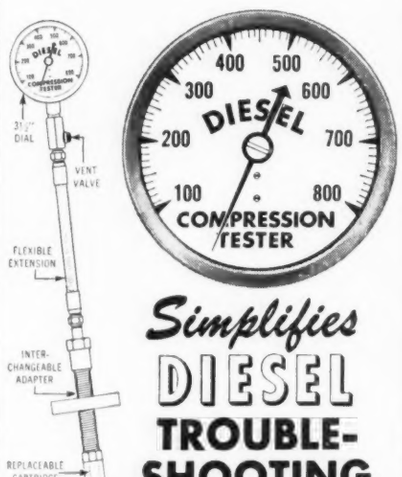
"A bowed rope is a weakened rope, Mac . . . those 'Finger Pinch' U-Bolt Clips crush and bend the rope . . . make the load *uneven* — some strands are overloaded . . . others don't carry their proper load. Results: premature rope failure . . . higher rope costs . . . lessened efficiency. Replace 'em with Laughlin 'Fist-Grip' Clips — they'll make your rope straight like *this* one, because their flat bearing surfaces give uniform pressure over the entire contact area. 'Fist-Grips' are easy to put on, too, Mac . . . even new men like yourself get 'em right the first time because they come in identical halves — you *can't* stagger 'em. Furthermore, three 'Fist-Grips' do the work of four U-Bolts, so you save time. Ask the Supply Room boys for 'Fist-Grips' . . . they prevent many a headache."

"Fist-Grip" Clips are available at your supply house. Look for the "L" trade-mark. Write for fitting catalog: Dept. 1, The Thomas Laughlin Co., Portland 6, Maine.

LAUGHLIN

THE MOST COMPLETE LINE OF DROP-FORGED WIRE ROPE AND CHAIN FITTINGS





Simplifies DIESEL TROUBLE-SHOOTING

No single factor of Diesel operation is more important than compression pressure. That's why trouble-shooting begins with a check of compression of all cylinders. Model YUF Diesel Compression Tester illustrated has been designed to meet all field and shop needs for an instrument that can take hard use yet give reliable, accurate readings on any make of Diesel engine.

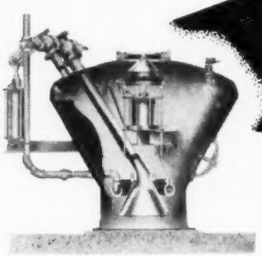
Attachment of tester is by means of interchangeable adapter which takes place of fuel injector. In addition to a "universal adapter" which serves more than 50 makes and types of Diesels, we have a complete line of special adapters for practically every commonly-used Diesel engine. Write for a copy of descriptive Leaflet 605.

ATTENTION! Distributors: **Diesel equipment and accessory jobbers are invited to write for information about attractive distribution proposition.**

BACHARACH INDUSTRIAL INSTRUMENT CO.
7000 BENNETT STREET, PITTSBURGH 8, PA.

WHAT EVERY LARGE CONTRACTOR SHOULD HAVE

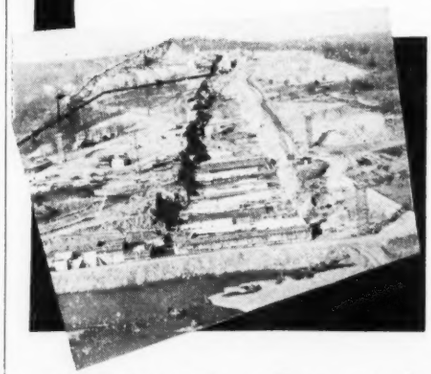
THE *Robinson System* FOR MOVING BULK CEMENT FROM SIDING TO MIXING PLANT . . .



Why should he have it? Because numerous installations have shown that it is the cheapest way to handle cement in bulk over relatively long distances . . . because it is a simple layout with no moving parts to get out of order or to cause heavy maintenance . . . because it operates on relatively low air pressure . . . because it can be readily dismantled, stored, and set up on a new job.

If you are operating on large contracts which call for handling a considerable tonnage of bulk cement, you should look into the merits of the Robinson System. You should have one or more units in your "stable" just as you have trucks, bulldozers, cement mixers, etc.

Write for further information.

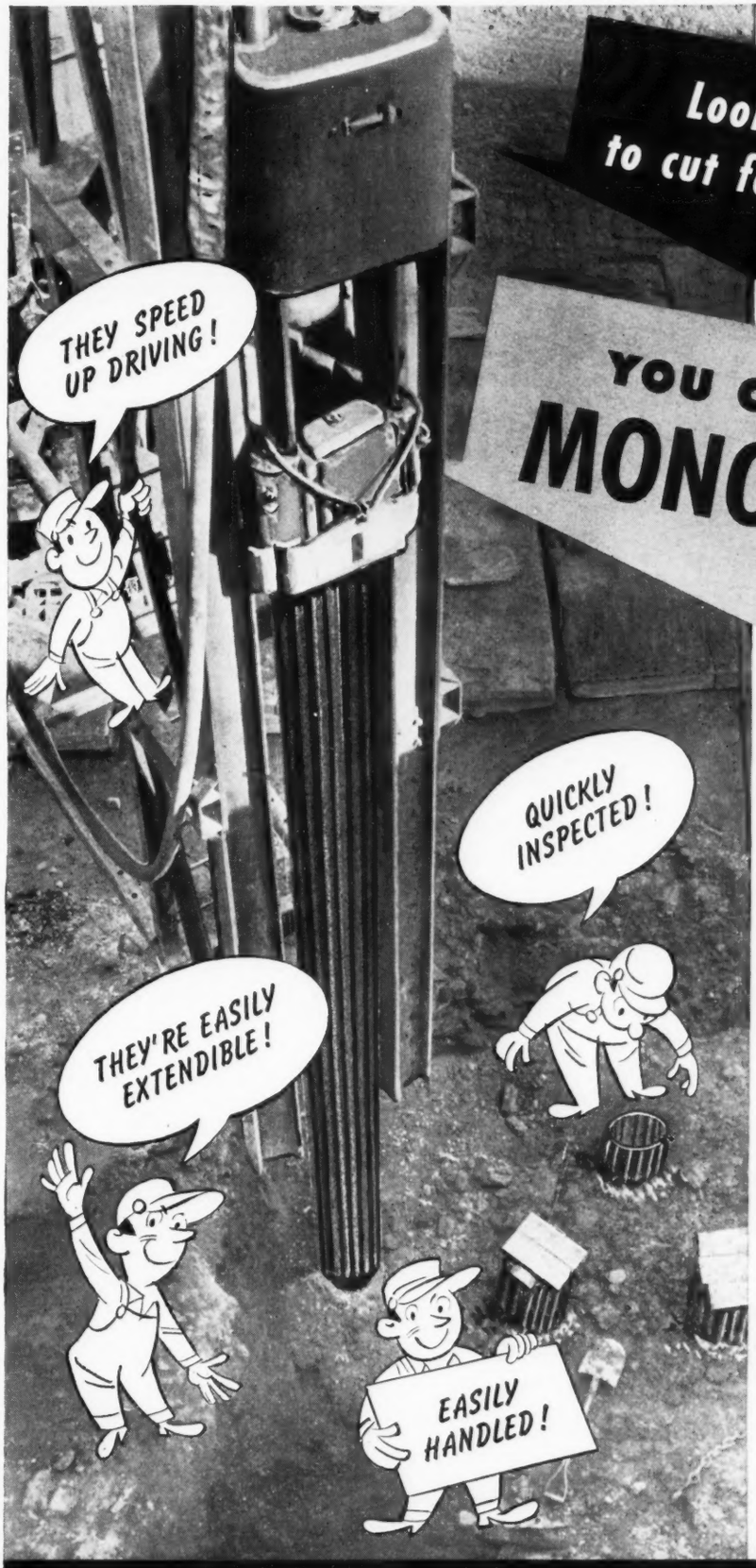


ROBINSON *Air-Activated* CONVEYOR SYSTEMS

Division of **MORSE BOULGER DESTRUCTOR CO.**

211-C E.42nd St. New York 17, N. Y.

Representatives in Principal Cities



Looking for ways to cut foundation costs?

YOU CAN WITH MONOTUBES!

FOR years experienced architects and builders have specified tapered steel Monotube piles for economical, efficient foundations. That's because Monotubes have *exclusive advantages* that show really worthwhile savings on time and cost records. Here's how:

Fluted tapered construction speeds driving.

Easily extendible to any required length, right on the job.

Tubular design makes thorough inspection quick and easy, before concreting.

Light in weight, they are easily and quickly handled.

On all counts — time is saved, labor costs reduced. If you're looking for ways to cut foundation costs, look to Monotubes to do it. Available in gauge, size and taper to meet varying soil conditions. Complete information on request — promptly. Write The Union Metal Manufacturing Company, Canton 5, Ohio.

UNION METAL

Monotube Foundation Piles

You Save
MUSCLE POWER
with **STERLINGS**

It's so easy to wheel heavy loads in Sterling Wheelbarrows, only a minimum of muscle power is required. Sterling's perfectly balanced construction permits 80% of the load to be carried on the wheel . . . only 20% by the operator. This saving in muscle power increases efficiency . . . allows more loads to be hauled daily . . . reduces hauling costs.

Although materials are still scarce, Sterling will make every effort to meet your wheelbarrow requirements just as soon as conditions permit.

STERLING WHEELBARROW CO., Milwaukee 14, Wis.

Look for this Mark of STERLING Quality

Sterling WHEELBARROWS

"LOW BRIDGE AHEAD"

the answer to that problem is this

ROGERS GIRDER-TYPE TRAILER

Rogers builds trailers for unusual needs, embodying characteristic features of fundamental design, but modified to meet special requirements. With a

Rogers Girder Type Trailer

there is slight chance of being confronted with a headroom clearance problem. Special construction affords an unusually low bed.

ROGERS BROTHERS CORPORATION
220 ORCHARD ST. ALBION, PA.

ROGERS TRAILERS

EXPERIENCE *builds 'em* • PERFORMANCE *sells 'em*

The J. D. Adams Manufacturing Co., Indianapolis, Ind. announces the appointment of **Buel Wallis** as eastern division sales manager. All sales east of the Mississippi will come under Mr. Wallis' jurisdiction, as well as federal sales.

Pioneer Engineering Works, Inc., Minneapolis, Minn. announces the appointment of two new distributors in Montana: Central Machinery Co., Great Falls, for the northwestern part of the state and Wortham Machinery Co. Billings, the southwestern area.

After having been located for 49 years in the Marquette Building at 40 S. Dearborn St., Marquette Cement Manufacturing Co. general offices have moved to 20 N. Wacker Drive, Chicago, Ill.

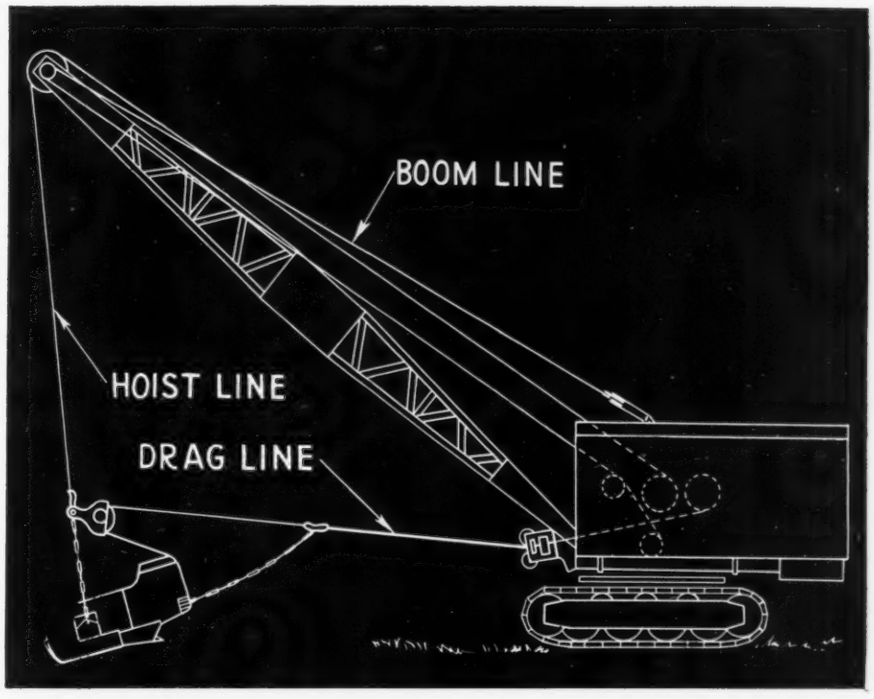
The Northwest Engineering Co., builders of shovels, cranes, draglines and pullshovels, announces the removal of their executive and sales offices to the Field Bldg., at 135 S. La Salle St., Chicago 3, Ill.

Opening of a new larger factory at Savanna, Ill. was recently announced by **C. R. Jahn,** president of the C. R. Jahn Co., Chicago, manufacturers of heavy duty, low-bed trailers.

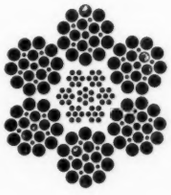
A new oxygen filling station and acetylene-producing plant are being built at Stockton, Calif. by The Linde Air Products Co., unit of Union Carbide and Carbon Corp. A warehouse for Union carbide also will be constructed. The new plants are expected to be completed in the late summer.

E. W. Jackson has been appointed director of parts and service, Caterpillar Tractor Co., Peoria, Ill. **M. T. Deames** has the general parts managership; and **W. Blackie,** vice-president and chief administrative head of the accounting and merchandise departments, has also assumed administrative guidance of the traffic department.

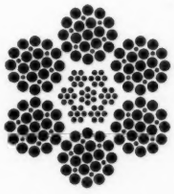
Appointment of Boyd O. Bach as manager of sales, fabricated steels construction, Bethlehem Steel Co., Bethlehem, Pa., has been announced.



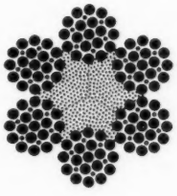
Simplifying the choice of Ropes for Dragline Excavators



TYPE U
independent
wire rope core



TYPE W
independent
wire rope core



TYPE W
fiber core

If you own a dragline machine, spend two minutes reading the following paragraphs. Then keep this page for reference. It will help you select the proper wire rope for every part of your outfit.

DRAGLINES are subjected more to abrasive wear than to bending fatigue. Therefore a Bethlehem Purple Strand 6 x 19 Type U rope is widely chosen, for the Type U has fairly large outer wires. Lang lay should always be used in this service. Independent wire rope core is recommended.

HOIST LINES generally travel over only one sheave; hence they are not as affected by wear as by bending fatigue and crushing. Bethlehem Purple Strand 6 x 19 Type W, lang lay, is widely specified. Independent wire rope core is generally used. Form-Set (preformed) construction optional.

BOOM LINES are more or less stationary. With little movement, there is little wear. A sound choice is Purple Strand 6 x 19 Type W, regular lay, independent wire rope or fiber core. Lang lay is also commonly used.

Further details are available through your nearest Bethlehem field engineer. Always check with him in cases of doubt. Part of his job is to help you get the *correct* wire ropes.

BETHLEHEM STEEL COMPANY, BETHLEHEM, PA.

On the Pacific Coast Bethlehem products are sold by Bethlehem Pacific Coast Steel Corporation

When you think WIRE ROPE . . . think BETHLEHEM

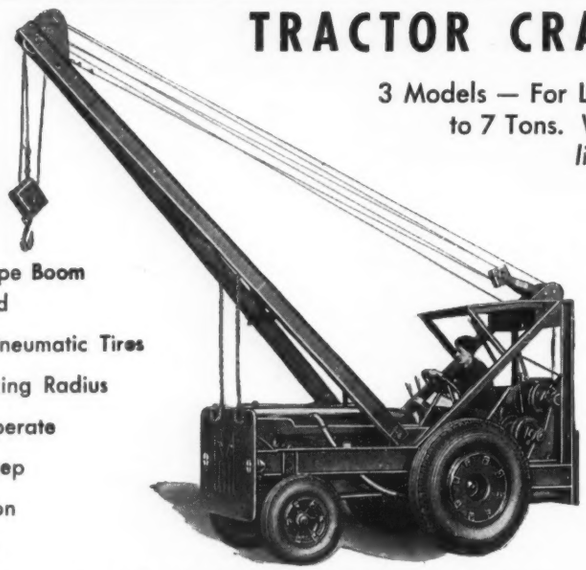
MERCER

"The Name that Carries Weight"

MATERIAL HANDLING EQUIPMENT

TRACTOR CRANES

3 Models — For Loads Up to 7 Tons. *Write for literature.*



Special Type Boom Designed

Solid or Pneumatic Tires

Short Turning Radius

Easy to Operate

Low Up-Keep

Clear Vision

Live Boom

MERCER ENGINEERING WORKS, INC.

Plant: Clifton, N. J.

SALES REPRESENTATIVE

MERCER-ROBINSON COMPANY, INC.

30 CHURCH ST., NEW YORK 7, N. Y.

Construction Speeded
with the
New
CLIPPER
HOIST
ONE MAN LOADS
LIGHTER AND EASIER
AUTOMATICALLY UNLOADS
FREE TRIAL on Your JOB
PORTABLE AND EASY TO OPERATE
You'll want the New Portable Clipper Hoist on your Job . . . Quickly set up ready for use. The Clipper Hoist is operated by only one man!
FEATURES AUTOMATIC UNLOADING
FASTER . . . Brick, tile, concrete and flue lining can be hoisted to greater heights, without fatigue.
FLEXIBLE . . . Practical for every job.
THE CLIPPER MANUFACTURING COMPANY
2800 WARWICK KANSAS CITY 8, MISSOURI
District Offices and Warehouses: Philadelphia • St. Louis • Austin, Tex

To provide the best possible service to owners of their products, the Detroit Diesel Engine Division has set up at its factory in Detroit a completely equipped school for training GM diesel mechanics in the operation and servicing of the Series 71 engine. Detroit diesel distributors and dealers may, upon proper application, send their service personnel to the factory for a concentrated but thorough training course in basic diesel mechanics.

Announcement of the appointment of Dravo-Doyle Co., Pittsburgh, as national distributors for the Hercules Turn-O-Matic cement box has just been made by Hercules Steel Products Corp., Galion, Ohio, manufacturers of this widely used product.

In keeping with the policy of the Euclid Road Machinery Co., to expand its services to distributors and customers, a sales development department, headed by **V. L. Snow,** has been established. This department will make field engineering studies for the improvement of current Euclid models and the development of new products. It will also prepare material for distributor's use in sales training programs for their personnel.

Cumberland Portland Cement Co., has moved its general and sales offices from Cowan, Tenn. into expanded new quarters in Chattanooga Bank Bldg., Chattanooga 2, Tenn.

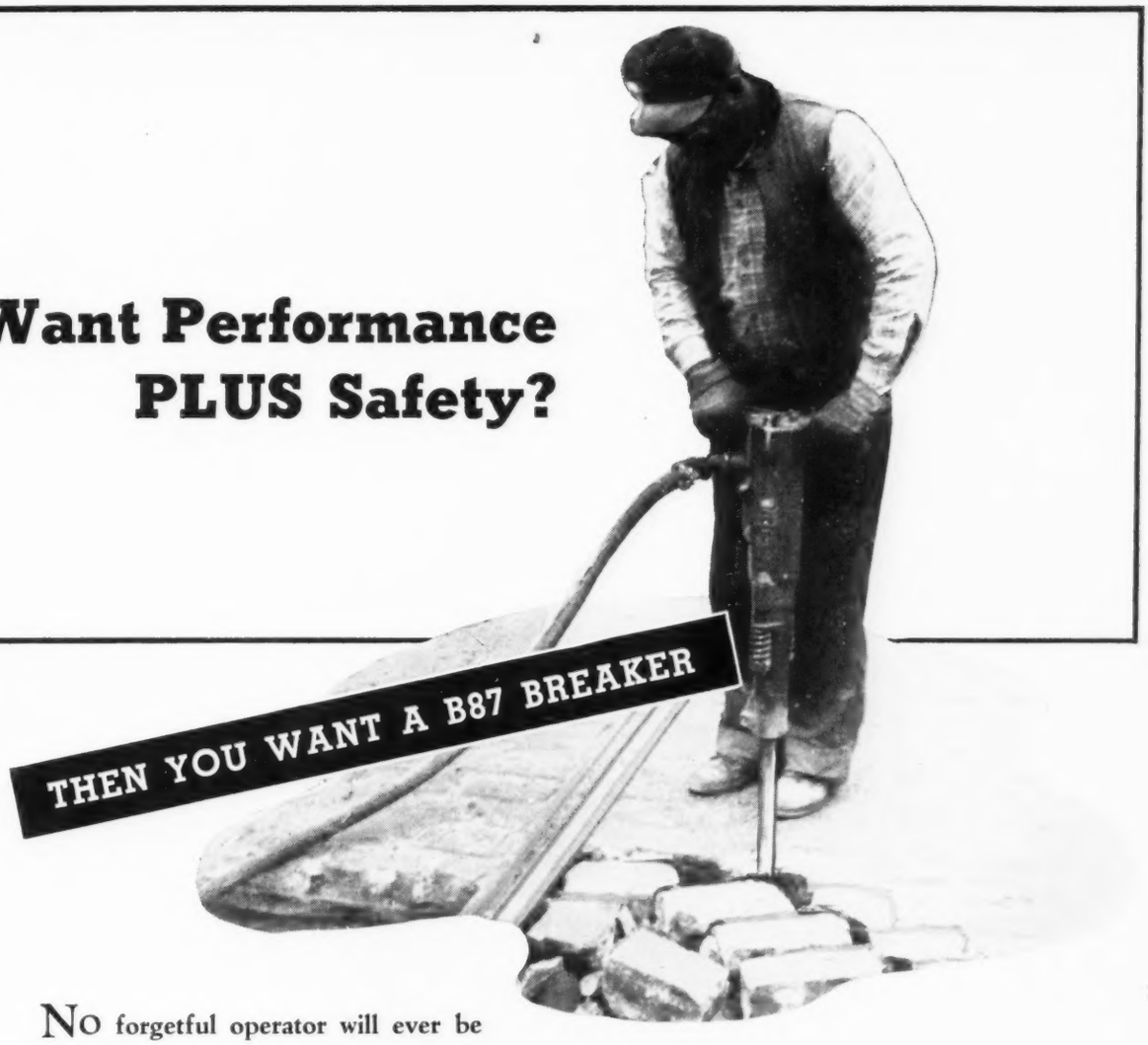
The American Rolling Mill Co., Middletown, Ohio, has assigned **Glen Hoover** to direct important accounts in Canadian territory, working out of the Buffalo, N. Y. offices. **Don H. Hogan** has become manager of the Cleveland District.

William G. Findlay has been appointed manager of the Pittsburgh plant of Joseph T. Ryerson & Son, Inc., succeeding **Howard L. Robinson** who has been given a special assignment at the Cleveland plant of the company.

Appointment of Frank S. Foster as Caterpillar district representative for the states of South Carolina, Tennessee and Georgia is announced.

Ceco Steel Products Corp., national manufacturers of metal building materials with general offices in Chicago, has just opened a new New York district plant and office at Hillside, N. J., replacing plant and district office formerly located in Jersey City.

Want Performance PLUS Safety?



THEN YOU WANT A B87 BREAKER

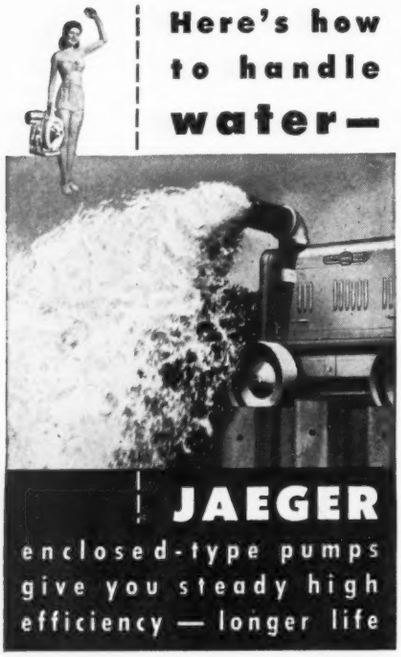
NO forgetful operator will ever be injured in moving a Gardner-Denver B87 Paving Breaker from place to place. This breaker is equipped with a new safety latch which enables it to be moved without shutting off the air. Working exactly like the "safety" on a gun, this latch prevents accidental opening of the throttle.

This highly efficient paving breaker, the B87, is easily convertible to a sheeting driver by removing the standard chuck and substituting jaw type sheeting driver head. Here are other features of the B87 that your men will like:

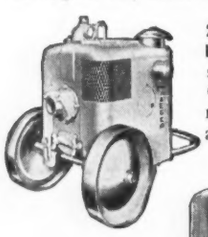
- ✳ *Easier to handle—a shorter breaker that offers more convenience either with standard length chisels and gads or with longer points.*
- ✳ *Oil and air economy — no joints on the B87 Breaker are under air pressure — there's no wasteful leakage of air or oil.*
- ✳ *Cooler handles — because air inlet is at side of cylinder, not through backhead.*
- ✳ *Positive built-in lubrication — integral reservoir provides for 5 hours normal operation.*
- ✳ *Better tool retainer — no nuts to work loose on the B87 — the extra heavy forged retainer pivots on a substantial pin held positively in place.*

GARDNER-DENVER
SINCE 1859

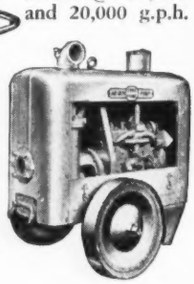
For complete information, write
Gardner-Denver Company, Quincy, Illinois



To a better engineered, more amply powered, conservatively rated line of pumps, Jaeger has added all-weather protection of all heavy duty models of 2" to 10" size — for sustained efficiency of pump and engine, extra hours of smooth, dependable performance, plus easy accessibility at all times.



2" and 3" Heavy Duty: Most rugged small pumps built. Conservatively rated @ 10,000 and 20,000 g.p.h.



4" to 10" Portables: Compact, extra powerful units of 40,000 to 240,000 g.p.h. rating and exceptional air capacity.

Self-Priming Super-Jet Pump: Extremely compact, yet outperforms old, heavy types. Pressures to 250 lbs.; 90 h.p. engine. Only 30 seconds to prime @ 20 ft.

Only Jaeger Offers All These
Inherent priming action plus "jet" priming — doubly sure and fast . . . long-life "Lubri-Seal," accessible for inspection . . . self-cleaning shell design . . . replaceable liners or seal rings . . . Every pump tested and certified for performance.

Sold, Serviced in 128 Cities

THE JAEGER MACHINE CO.
Main Office, Factory, Columbus 16, Ohio
8 E. 48th St. NEW YORK 17, N. Y.
226 N. La Salle St. CHICAGO 1, ILL.
235-38 Martin Bldg., BIRMINGHAM 1, ALA.

Euclid-Chicago Co., 201 N. Wells St., Chicago 6, Ill., has been appointed Euclid distributor for northwestern Indiana, northern Illinois and southern Wisconsin. Pricipals are **Robert M. Jones** and **Horace K. Church.** The service and parts department is in charge of **Harvey Landmeier; Jack Wathen** is office manager.

Allis-Chalmers Tractor Division recently announced the appointment of **E. J. Mercer** as industrial district manager for the company's New York State territory.

Henry D. Osterholz has become general manager of Anderson Brick & Supply Co., Inc., New York 35, N. Y. The company has been in the building material business for 25 years.

Robert P. Nichols has been appointed assistant domestic sales manager for R. G. LeTourneau, Inc., Peoria, Ill.

R. Bruce Hunter has been appointed manager of the Gary Ind. plant of American Bridge Co. **W. A. Thiel,** who is succeeded by Mr. Hunter, has been placed in charge of construction and maintenance of the company's western division plants at Gary and Minneapolis, Minn.

ARMSTRONG BROS.
CHAIN TONGS
"ARMSTRONG BROS." Chain Tongs come in "Standard" "Reversible Jaw" and "Ideal" (V-jaw) types—in sizes for every need. Their drop-forged jaws have milled teeth, are hardened, tempered and tested for wearing qualities. They have heavy forged-in lugs that give extra bearing on the handles to which they are rigidly held by a large hardened steel bolt. The handles are forged and heat treated to the correct balance of stiffness and spring.
Shackles are drop forged and chains proof-tested to 2/3 catalog strength (3,600 lbs. to 40,000 lbs.)
Write for Chain Tongs Circular
ARMSTRONG BROS. TOOL CO.
334 N. Francisco Ave.
Chicago 12, Illinois
NEW YORK SAN FRANCISCO

PRACTICAL DATA ON

7500 *materials*

at your fingertips

Save endless time by using this handbook for preliminary survey when you need materials. Easy to consult it gives the most helpful facts on kinds, properties, uses, sources, for natural and synthetic materials needed by purchasing agents, product engineers, factory executives, etc.

AN ENCYCLOPEDIA FOR
Purchasing Agents
Engineers
Executives
Foremen

Just Published

Revised, Enlarged 6th Edition

MATERIALS HANDBOOK

By GEORGE S. BRADY

789 pages, 6 x 9, $7.00

This book puts the engineer and executive in command of a vast store of constantly useful information—a short cut to accurate, essential facts needed in the selection and specification of materials. It assembles the most pertinent facts to enable you to make quick comparisons, avoid checking many sources and remote possibilities, get quickly to the few materials best suited to a specific purpose.

In this new edition more than 800 additional materials are described—bringing the total to 7500. It also includes a new section on fundamental materials economics, and contains many useful tables. Arranged and indexed for instant reference, the book gives chief characteristics, comparative data, sources, substitutes, adulterants, and uses of material items. The chief ores and most important industrial chemicals are included.

Covers such material groups as:
Abrasives
Bearing Metals
Brasses and Bronzes
Building Materials
Corrosion-resistant Alloys
Cupro-nickel Alloys
Fabrics, Leathers, Organic Materials
Fibers
Heat-resistant Alloys
Heat-treating Materials
Chemicals
Iron and Steel
Light Metals
Molding Materials, Resins, Gums, Waxes
Refractories
White Metals and others

SEE IT 10 DAYS FREE • MAIL COUPON

McGraw-Hill Book Co., 330 W. 42nd St., N.Y.C. 18
Send me Brady—MATERIALS HANDBOOK for 10 days' examination on approval. In 10 days I will send $7.00 plus few cents postage, or return book postpaid.

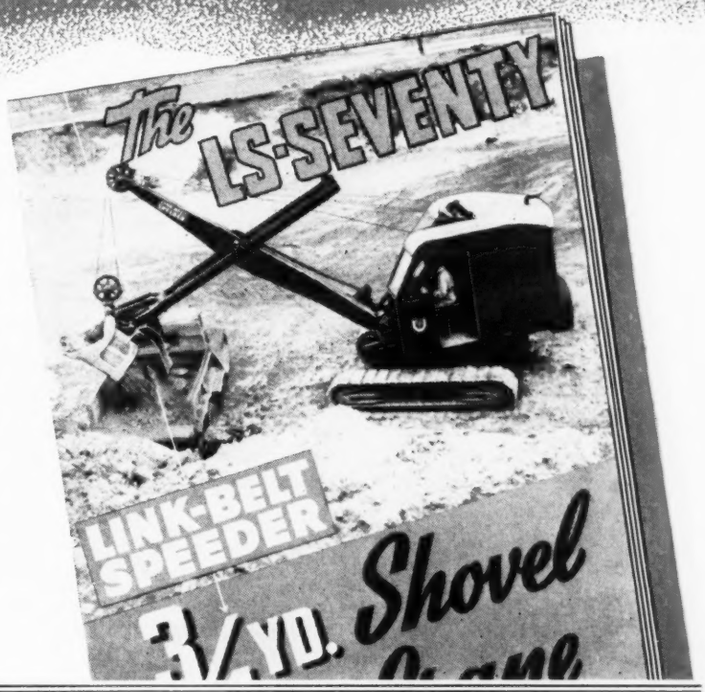
Name .....
Address .....
City and State .....
Company .....
Position CM-8-47

For Canadian prices write Embassy Book Company
12 Richmond Street E., Toronto 1

Send for Your Copy

OF THIS NEW CATALOG

DESCRIBING THE LINK-BELT SPEEDER LS-70, ¾ YARD Shovel-Crane



This catalog — just off the press, describes in full detail and illustrates the numerous distinctive features of this ¾ yard Shovel-Crane. From this "word-and-picture" story you will readily understand the outstanding performance this machine is now giving in widely separated areas, under the many varying conditions of service. You will easily accept the promise of long life and trouble-free operation, written in terms of advanced design, better materials and precision construction found in those locations where an experienced user will first look for them.

Send today for your copy. Become familiar with the features, the capacities, the appreciations of this new, advanced, versatile machine, one of the twenty-five models, ranging from ⅜ yd. to 3 yd. capacity, and offering a size and type to suit practically every requirement for excavation, construction and materials handling.

10,815

In the line of Link-Belt Speeder Shovel-Cranes there is a type and size to meet every requirement. And located near you is a Link-Belt Speeder distributor, informed, experienced and equipped to give you valuable aid in selecting machinery for your particular needs, and in keeping your equipment in top-notch operating condition.

The combination of skilfully designed, precision-built Link-Belt Speeder Shovel-Cranes, with interested, capable and cooperative distributor service, is your assurance of profitable performance.

LINK-BELT SPEEDER

LINK-BELT SPEEDER CORPORATION, CEDAR RAPIDS, IOWA

Builders of the Most Complete Line of
SHOVELS-CRANES-DRAGLINES

SAFE FOR THE BIGGEST LOADS

Hauling contractors everywhere depend on Jahn Heavy-Duty Trailers for safe, fast and economical moving of their heaviest loads like this 110,000-lb. transformer. Deep, wide flange main beams run the full length of the trailer. Cross-members and outriggers are I-Beam sections. Improved, fabricated gooseneck adds greater built-in strength. Positive, self-equalized braking at each wheel regardless of position of axle assures maximum safety. See your nearest Jahn dealer for details.

★

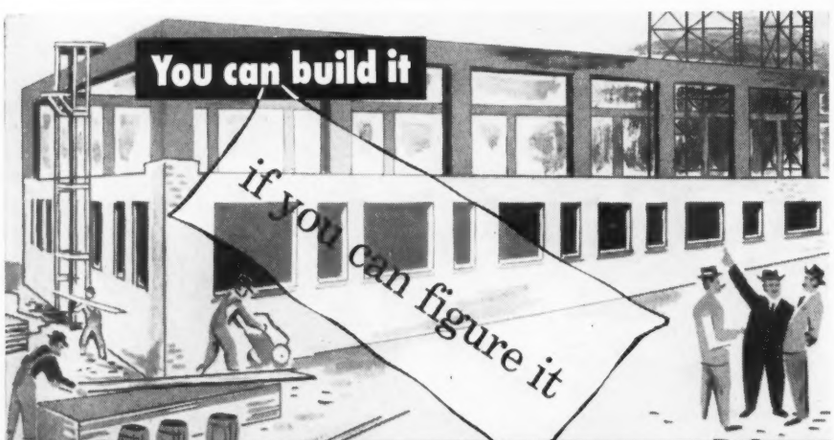
C. R. JAHN COMPANY

1335 W. 37th Place Chicago 9, Ill.

Heavy duty trailers from 5 to 100 tons.

JAHN TRAILERS ALL OVER the WORLD!

Reg. Trade-Mark



LEARN ESTIMATING IN SPARE TIME

Figure big or little jobs quickly and accurately the Tamblyn way for DEPENDABLE profits! Analyze current building costs. Learn the simple, easy Tamblyn System of Estimating — in your SPARE TIME! Used by successful contractors for more than 20 years. Try it for 10 days at our expense! *The Tamblyn System*

FREE TRIAL **MAIL NOW** Tamblyn System, Johnson Bldg CM-8, Denver 2, Colo.

Send me Tamblyn System on 10 day trial. I will pay $5.00 per month until $30.00 is paid if I keep it. If not, I will return it.

NAME_____

ADDRESS_____

CITY STATE

SEND NO MONEY! TRY IT BEFORE YOU BUY!

Jones & Laughlin Steel Corp., Pittsburgh, Pa., announces the following personnel changes: **D. W. Thomas,** assistant general manager of sales, tin mill products; **J. E. Timberlake,** assistant general manager of sales, wire products; **J. O'H. Anderson,** district sales manager, New York district sales office; **S. A. Fuller,** manager, market research department; **Howard A. Knox,** manager of sales, tin mill products; **C. E. Kendall,** manager of sales, wire products; **D. J. Henecker,** manager of sales, wire rope products.

R. J. Loskill, former central division credit manager of Caterpillar Tractor Co., has been appointed a central sales division district representative. He will serve the following "Caterpillar" distributors: Gibbs-Cook Tractor & Equipment Co. of Iowa; Halladay-Dettman Co. of South Dakota; Lincoln Equipment Company of Nebraska and Missouri Valley Machinery Co. of Nebraska.

Robert P. Tyler has been elected vice-president in charge of sales for Macwhyte Co., Kenosha, Wis.

Walter A. Olen, president of the Four Wheel Drive Auto Co., has been named Wisconsin vice-president of the National St. Lawrence Association.

Tractor Conn

(Continued from page 93)

may escape liability for a breach of a contract which it has made because of the probable consequences thereof," said the Kentucky Court of Appeals in overruling this contention.

"Apart from the action of the banking department, the contract was an unwise one. The department would have stopped it sooner or later and the earlier the better for Tractor Conn," the bank contended as a last resort, but the Court overruled this contention as well, in the following words:

"No one can read this record without coming to the conclusion that the contract which was made by the bank with Tractor Conn was unwise, and probably would have resulted in the state banking commissioner taking steps to protect

(Continued on page 168)

FOR RAPID REINFORCEMENTS ON EVERY CONSTRUCTION JOB...

call your local distributor

Almost every day, on every construction job, unforeseen needs arise . . . sometimes for major items like additional equipment . . . sometimes for smaller items like nuts and bolts.

Whatever the need, it affects job progress. It must be taken care of swiftly, economically, and with minimum inconvenience.

That's where the distributor comes in. Whether you need bolts or bulldozers, you'll get prompt, effective action through your local distributor.

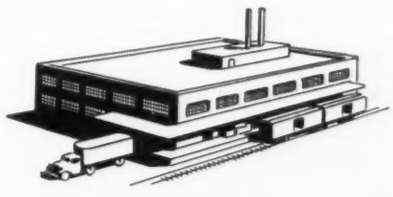
Distributors stock thousands of essential construction items in warehouses and yards convenient to the job. Products of distant manufacturers are immediately available. And if the distributor cannot supply a needed item out of stock, chances are his intimate knowledge of sources of supply and procurement procedures will help obtain it *faster*.

And, in addition to his warehousing and procurement services, the distributor stands ready to make routine and emergency deliveries to the job site.

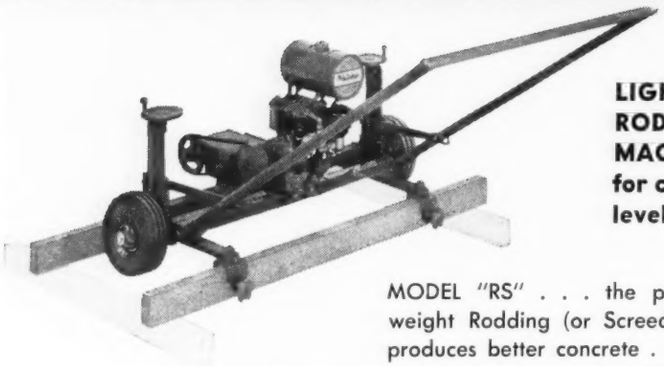
It's convenient and economical to deal with the local distributor. Ask him to work with you from start to finish on every construction job.

Make Distributor's Headquarters Your Service Headquarters

No. 1 in a series of ads sponsored by ENGINEERING NEWS-RECORD and CONSTRUCTION METHODS showing how distributor service aids economical construction



Machine Economy and Perfection for SMALL CONCRETE JOBS



LIGHTWEIGHT RODDING MACHINE for compact and level slabs

Built by the makers of the famous Whiteman Floating-Finishing Machine

MODEL "RS" . . . the portable lightweight Rodding (or Screeding) Machine produces better concrete . . . saves time and money. It rods 3 to 12 foot slabs to perfect level . . . puddles and vibrates entire depth and area at the same time. Also in Portable Model 44, for slabs 10 to 20 feet wide.

Write or wire for details . . . and name of nearest distributor.

Whiteman CONCRETE EQUIPMENT
WHITEMAN MFG. CO.
3249 Casitas Ave., Los Angeles 26, California

CONTRACTORS RUBBER PRODUCTS
available from Stock for immediate Delivery

CONVEYOR, ELEVATOR and TRANSMISSION BELTING
all widths and plys

V-BELTS all sizes

HOSE all sizes

AIR	WATER	SUCTION	COMPRESSOR
FUEL	STEAM	WELDING	PILE DRIVERS
FIRE	VACUUM	DISCHARGE	ROAD BUILDERS

and BOOTS, DREDGE SLEEVES, PUMP DIAPHRAGMS, ETC.

and everything rubber for Industrial Requirements

PHONE . . WIRE . . WRITE **Write for new catalog**

CARLYLE RUBBER CO., Inc.
62-66 PARK PLACE NEW YORK 7, N. Y.
Phone: BArclay 7-9793

(Continued from page 166)

those whom it is his duty to protect; but because the bank made an unwise contract, where the contract was not forbidden by law, does not release it from responsibility. It is doubtless a good thing for the bank that it withdrew from the contract, as it chose the lesser of two evils. But if in protecting itself from two evils, it damaged Tractor Con,, it can be made to respond in damages."

Garrison Dam

(Continued from page 98)

forethought has paid dividends; the barge maneuvers easily.

In the words of Frank Harrison, vice-president, Missouri Valley Constructors, Inc., the floating piledriver has more than fulfilled expectations. The rig maneuvers rapidly and adjusts the leads to the various batters in a minimum of time. Piling has been held true to position and direction, and the contractors have experienced no difficulty in driving the piles within specified tolerances of 3 in. for position of the top of the pile and ¼ in. per ft. for pile line, either vertical or batter.

Plans for the floating piledriver were conceived and executed by John Kuhn, manager of construction, and Harold A. Low, chief engineer, of Missouri Valley Constructors, Inc., ably assisted by the engineering staff of Winston Bros. Co. and with the help of George Lamb, Topeka, Kan., and Carl S. Harper, of Howard, Needles, Tammen & Bergendoff, New York and Kansas City, consulting engineers on design of the bridge, for the Garrison District of the Missouri River Division, Corps of Engineers, War Department.

Construction of the bridge is under the jurisdiction of Col. W. W. Wanamaker, District Engineer, with John W. Sibert, Jr., as chief of the construction division and C. Albert Fisk as resident engineer at the site. John Kuhn and Frank Harrison have been in charge of bridge construction for the joint contractors, Missouri Valley Constructors, Inc., and Winston Bros. Co.

on TNT

ONLY 4½¢ per lb.!

Approximately 25,000,000 pounds available on continuous sale. Sale to priority groups closes Sept. 2, 1947

PRICE, F. O. B. LOCATION, 4½¢ PER LB.

This material is available for immediate sale and delivery to all classes of purchasers at the following War Assets Administration Regional Offices in the approximate quantities shown. Offers to purchase may be made at any WAA office, or by letter, wire, or personal visit to any of the Regional Offices listed. If your offer is written mark your envelope "Offer to Purchase Trinitrotoluene, A-128".

WAA OFFICE	½ LB.	1 LB.
Birmingham	——	482,000
Chicago	——	1,160,700
Cincinnati	21,145	3,527,595
Denver	1,202,900	463,841
Grand Prairie, Texas	——	693,870
Los Angeles	——	867,630
Minneapolis	——	1,600,530
Nashville	1,616,600	——
New York	——	50,000
Omaha	1,064,900	1,843,200
Philadelphia	——	1,170,000
Portland	27,556	1,436,024
Salt Lake City	341,980	8,320,745
San Francisco	45,710	51,747
St. Louis	8,500	——
	4,329,291	21,667,882

This is a concurrent and continuous sale, 10% reserved for Federal Agencies and Priority Claimants until September 2nd. All orders received from priority claimants will be filled from the reserve. Non-priority orders will be filled immediately upon receipt.

This material is offered, as is, subject to inspection by purchaser at location, without expressed or implied warranty except as to title. WAA reserves the right to reject any or all offers, and to make awards in whole or in part. All items subject to prior withdrawal.

Purchasers of Trinitrotoluene are required to observe all applicable laws regulating the sale, use, handling and storage of explosive materials.

Purchaser's order must state thereon: (a) "This order is subject to War Assets Administration Standard Conditions of Sale, and all other advertised terms and conditions, and no other terms or conditions should be binding on War Assets Administration", (b) Type of business and level of trade. Orders from veterans must show certification date, case number and location of certifying office.

T. N. T. is relatively insensitive to shock and is one of the most stable of the high explosives. For many blasting operations it is superior to dynamite.

T. N. T. does not deteriorate like dynamite and turning, to prevent deterioration, is not required. It can be stored over long periods of time and can be handled and shipped with comparative safety.

T. N. T. burns at 266 degrees F. and can be burned in the open in small quantities without exploding. If burned in confinement or in large quantities, it explodes.

T. N. T. is insoluable in water and may be used in underwater charges. It is non-hygroscopic and does not form sensitive compounds with metal.

USES

T. N. T. can be used wherever 40-60% dynamite is employed with the *exception of underground operations* or for use in closed spaces because its explosion produces poisonous gases.

It can be used for swamp drainage and is highly efficient in quarrying, above ground mining, road construction, soil conservation, mud capping, stump removal, seismographic surveying, and for "blowing out" oil well fires.

The use of Primacord (in place of caps) on each block of T. N. T. is recommended. Then there is no danger of detonating unexploded caps when clearing holes.

OFFICE OF GENERAL DISPOSAL

WAR ASSETS ADMINISTRATION

Offices located at: Atlanta • Birmingham • Boston • Charlotte Chicago • Cincinnati • Cleveland • Denver • Detroit • Grand Prairie, Tex. • Helena • Houston • Jacksonville • Kansas City, Mo. • Little Rock Los Angeles • Louisville • Minneapolis • Nashville • New Orleans • New York • Omaha • Philadelphia • Portland, Ore. • Richmond • Salt Lake City St. Louis • San Antonio • San Francisco • Seattle • Spokane • Tulsa

1297

Customer Service Centers in these and many other cities.

When equipped with a Mall Vibrator, one man can place more concrete than five hand puddlers. At the same time, the concrete placed is denser because a stiffer mix is used . . . is free of voids and honeycombs . . . and has a better bond with reinforcements and between successive layers. Its 1½ or 3-h.p. Gasoline Engine also operates tools for *Grinding, Sanding, Wire Brushing, Pumping, Drilling and Sawing*—thereby keeping the unit busy all day long. Also Electric and Pneumatic models.

Ask your Supplier or write Contractors' Equipment Division for literature and prices.

MALL TOOL COMPANY, 7757 South Chicago Avenue, Chicago 19, Ill.

26 Years of "Better tools For Better Work"

Mall REG. U.S. PAT. OFF. PORTABLE POWER TOOLS

SYNTRON

Gasoline Hammer

PAVING BREAKERS

100% Self-Contained

Save Time and Money—

BUSTING — CUTTING
DIGGING — TAMPING

Write for illustrated folder.

SYNTRON CO.

500 Lexington Homer City, Pa.

No. O EMBURY AIR PILOT LANTERN

Order through Your Jobber

EMBURY MFG. CO., WARSAW, N. Y.

Advertisers in this issue

Acme Wire & Iron Company 15
Adams Manufacturing Co., J. D. 113
Aircraft Standard Parts Co., Inc. 150
Alemite Div., Stewart-Warner Co. 109
All-Purpose Spreader Co., The 130
Allis-Chalmers Mfg. Co. 28, 29
American Hoist & Derrick Co. 136
American Manganese Steel Div., American Brake Shoe Co. 123
American Steel & Wire Co. 132
Armco Drainage & Metal Pdts. Co., Inc. 154
Armstrong Bros. Tool Co. 164
Armstrong Rubber Co. 33
Atkins & Co., E. C. 54
Atlas Powder Co. 75
Austin-Western Co. 55

Bacharach Industrial Instrument Co. 158
Baker Mfg. Co. 35
Barber-Greene Co. 6
Bay City Shovels, Inc. 52
Bethlehem Steel Co. 42, 68, 161
Blaw-Knox Div., Blaw-Knox Co. 26, 27, 122
Briggs & Stratton Corp. 117
Bucyrus-Erie Co. 46

Caine Steel Co. 152
Carlyle Rubber Co. 168
Carver Pump Co. 153
Caterpillar Tractor Co. 57
Chain Belt Company 37
Chevrolet Motor Div., General Motors Co. 34
Cleveland Trencher Co., The 148
Clipper Mfg. Co. 162
Complete Machinery & Equip. Co. 171
Construction Machinery Companies 122
Construction Methods 167
Continental Motors Corp. 120
Cumberland Portland Cement Co. 72
Cummins Engine Co., Inc. 137

Dewar Machy, Inc. 171
Diamond Chain Co., Inc. 73
Disston & Sons, Inc., Henry 40
Dixon Valve & Coupling Co. 142
Dodge Div., Chrysler Corp. 151
Drake-Utah-Grove 171
duPont de Nemours & Co., E. I. (Fabrics Division) 124

Electric Tamper & Equipment Co. 118
Embury Mfg. Co. 170
Engineering News-Record 167
Etnyre & Co., E. D. 146
Euclid Road Machinery Co., The 7

Foote Co., Inc., The 66
Ford Motor Company
(Industrial & Marine Engine Div.) 125
(Truck Division) 139

Gardner-Denver Co. 163
General Excavator Co., The 74
General Motors Corporation
(Chevrolet Motors Div.) 34
(Detroit Diesel Engine Div.) 41
General Tire & Rubber Co., The 61
Goodall Rubber Co., Inc. 114
Goodrich Company, B. F. 9
Goodyear Tire & Rubber Co., The 76
Gorman-Rupp Co., The 149
Griffin Wellpoint Co. 126
Gulf Refining Co. 116

Haiss Mfg. Co., Geo. 171
Haynes Pdts Co. 171
Hazard Wire Rope Div., American Chain & Cable Co., Inc. ..... 3rd Cover
Heil Company, The 127
Highway Equipment Co., Inc. 138
Hose Accessories Co. 154
Hough Co., The Frank G. 133
Huber Mfg. Co., The 23

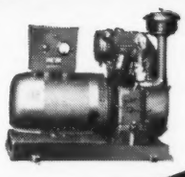
Independent Pneumatic Tool Co. 20
Inland Steel Co. ..... 2nd Cover
International Harvester Co.
(Industrial Power Division) 121
(Motor Truck Division) 44
Iowa Mfg. Co. 32
Irvington Form & Tank Corp. 67

Jaeger Machine Co., The 45, 164
Jahn Company, C. R. 166
Johns-Manville Corp. 157
Jones & Laughlin Steel Corp. 107
Joy Mfg. Co. (Sullivan Div.) 144

(Continued on page 172)

WHERE TO BUY

COMPLETE
WELL POINT SYSTEMS
WILL DRY UP ANY EXCAVATION
Faster—More Economically
Write For Job Estimate and 32 page Catalog
COMPLETE
MACHINERY & EQUIPMENT CO., Inc.
36-36 11th St., Long Island City, N. Y.
Tel. IRonsides 6-8600
Branch: Third Avenue & Adams St., Gary, Indiana
Telephone: Gary 23983

STERLING QUALITY
STERLING LIGHT PLANTS

SIMPLE
DEPENDABLE
RUGGED
•
WRITE FOR LITERATURE
STERLING MACHINERY CORPORATION
405 Southwest Blvd., Kansas City, Mo

WIRE ROPE CUTTER
CAPACITY — 1½"
PRICE — $27.50
BULLETIN ON REQUEST
Dealers Territory Open
MONTGOMERY
and Company, Inc.
53 PARK PLACE • NEW YORK 7, N. Y.

GEORGE HAISS MFG. CO., INC.
139th ST. & CANAL PL., NEW YORK 51, N.Y.
HAISS CLAMSHELL BUCKETS

Waterproof with Formula No. 640
A clear liquid which penetrates 1" or more into concrete, brick, stucco, etc., seals—holds 1250 lbs. per sq. ft. hydrostatic pressure. Cuts costs: applies quickly—no mixing—no cleanup—no furring—no membranes. Write for technical data—free sample.
HAYNES PRODUCTS CO., OMAHA 3, NEBR.

✓Check SYMONS
FORMS & TIES
SAFETY SHORES
COLUMN CLAMPS
For Rent and Sale
SYMONS CLAMP & MFG. CO.
4255 DIVERSEY AVE. CHICAGO 39

PROFESSIONAL SERVICES

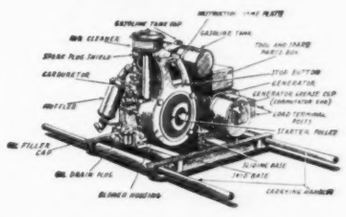
LANCASTER, ALLWINE & ROMMEL
Registered Patent Attorneys
Patent and Trade-Mark Practice before U. S. Patent Office. Validity and infringement Investigations and Opinions. Booklet and form "Evidence of Conception" forwarded upon request.
Suite 417, 815-15th St., N.W., Washington 5, D.C.

SEARCHLIGHT SECTION

DRAKE-UTAH-GROVE
War Department Contract W-04-470
PHILIPPINE ISLANDS
Immediate Employment
Department Engineer (M.E.)—Plumbing
Department Engineer—Architect (Detailing)
Department Engineer—Electrical
Office Engineer
Statistical Engineer—Cost Estimators
Cost & Construction Superintendent—Roads
Chief Timekeeper
Sheetmetal Workers—Blueprint & Layout Experience

FOR PLANING AND SAWMILL OPERATIONS
GENERAL FOREMEN
Extensive Experience Operating Matchers, Moulders & Stickers.
Charge of Carpenter Shop & Handle Wood Form Prefabrication —Layout Work
Charge of Mill, pre-cut & Mill Stock, Tool Room & Lumber Handling in Rough and Finished Yard Stock
SHIFT FOREMAN PLANING MILL
CARPENTER (Millwright)
Saw Filer
Tension & Sharpen Resaw or Band Blades, Straighten & Sharpen Circular Saw Blades, Operate Automatic Sharpening Equip.
Experience Profile Grinding
Requirements—Proof of U. S. Citizenship, 50 years of age Max., No Families.
Apply in Person
DRAKE-UTAH-GROVE
Mold Loft-Marinship-Sausalito, Calif.
or write P.O. Box "A"— Sausalito, Calif.

FOR SALE
Partial List of New and Used equipment for sale and immediate delivery.
56 Dump Trailers ATHEY trak type, 13 yd. New, boxed for export.....½ price.
21 Pumps, peerless, New, boxed for export. Deep well, hi-lift Mo.52 for 6" well, powered by 4 cyl. Waukesha engine.....$1075.00 ea.
16 Cranes Le Tourneau New, 20' boom pneu. tires, 20 tons.....$1275.00 ea.
55 Rock Drills and Pavement Breakers New Syntron and Warsop boxed for export.....$185.00 ea.
104 Shop cranes Manley 2 ton New, boxed for export.....$94.00 ea.
RECONDITIONED:
72 tanks 2000 gal. mtd. on semi trailers w/gas engine, 2 pumps and meters for gasoline etc.....$1500.00 ea.
141 trucks GMC 3 axle drive.....$1350.00 ea.
23 Austin Western Badger Cranes Crawler type late Mo. like new.....$3750.00 ea.
76 engines Hercules Mo. JXC Skid Mtd. complete w/radiator and transm.....$550.00 ea.
We have two five acre yards full of New and Used equipment and machinery.
SORENSEN EQUIPMENT CO.
4430 East 12th St., Oakland 1, Calif.

***NEW* PORTABLE ELECTRIC GENERATING SETS**

50% Off; 2.5 Kw, 110V, 60 Cycle, 1 Ph. Weight 330 lbs. Ideal for Contractors. Also Larger Sets.
IMMEDIATE DELIVERY
SPRAYED INSULATION, INC.
78 Hawthorne Pl., Montclair, N. J.

ROAD ROLLER
Buffalo-Springfield, Model KX-16. Three axle tandem, 9 to 14 tons. Condition, new. Powered with a Continental six cylinder engine. Highway Yellow paint. Price $4,850.00 f.o.b. Cleveland.
DEWAR MACHINERY, INC.
418 Schofield Bldg., Cleveland, Ohio

SALESMAN for LEADING MANUFACTURER
Well known manufacturer of rubber-tired contracting and industrial earth moving equipment desires the services of a few top-notch salesmen to represent it in various sections of the United States. Must be qualified and experienced in selling direct or through dealers. Large territories requiring extensive traveling. Permanent positions with good salaries plus commission earnings. In reply, please submit all pertinent personal and employment data including summary of sales record.
SW-1060, Construction Methods
520 N. Michigan Ave., Chicago 11, Ill.

Parmanco

MECHANICAL FEED HORIZONTAL DRILL WITH TRACTION DRIVE

Ten years of field test has proven that our power-feed design of direct, transmission and worm gearing with two-speed control will not only cut shot hole drilling time in half but also eliminates costly maintenance delays. V-belt drive to the power-feed with an additional ample clutch in that assembly gives absolute control of a drilling speed of two to three feet per minute with a retrieving speed of twenty-four feet per minute.

The Parmanco Horizontal is adapted to all forms of high-wall drilling, will handle a six-inch auger up to a distance of sixty feet or more and, by use of our patented augers with interrupted flights and secondary cutters, will drill an absolutely clean hole with a minimum of torque. It permits the drilling of a controlled-angle hole which makes possible a great saving of explosives through the cantilever effect of this controlled-angle drilled hole.

EFFICIENT STRIPPING STARTS WITH EFFICIENT DRILLING

PARIS MANUFACTURING COMPANY

PARIS, ILLINOIS

Advertisers Index

(Continued from page 170)

Koehring Company 16, 17

Lancaster, Allwine & Rommell 171
LaPlant-Choate Mfg. Co., The 21
Laughlin Company, The Thomas 158
Lehigh Portland Cement Co. 43
Le Roi Company 36
Leschen & Sons Rope Co., A. 24
LeTourneau, Inc., R. G. 48, 49, 134, 135
Lima Locomotive Works, Inc. 63
Link-Belt Speeder Corp. 165
Lone Star Cement Corp. 5
Lufkin Rule Company 146

Macwhyte Company 59
Maine Steel, Inc. 8
Mall Tool Company 170
McGraw-Hill Book Co. 164
McKiernan-Terry Corp. 118
Mercer-Robinson Co., Inc. 162
Michigan Power Shovel Co. 147
Mining Safety Device Co., The 142
Minneapolis-Moline Power Implement Co. 128
Mixer Mfrs. Bureau 140
Montgomery & Co., Inc. 171
Moretrench Corporation 51

National Lead Co. 14
Northwest Engineering Co. 11
Novo Engine Co. 22

Oliver Corporation, The 2, 3
Onan & Sons, Inc., D. W. 156
Osgood Company, The 74
Owen Bucket Co., The 156

Page Engineering Co. 60
Paris Mfg. Co. 172
Perfection Steel Body Co., The 145
Pettibone Mulliken Corp. 69
Preformed Wire Rope Information Bureau 70

R.P.B. Coporation 65
Red Star Products, Inc. 56
Roebling's Sons Co., John A. 115
Rogers Brothers Corp. 160
Robinson Air-Activated Conveyor Systems Div., Morse-Boulger Destructor Co. 158

Schramm, Inc. 10
Seaman Motors, Inc. 71
Searchlight Section 171
Shunk Mfg. Co. 138
Sinclair Refining Co. 155
Snap-on Tools Corp. 119
Socony-Vacuum Oil Co., The 30, 31
Sonoco Products Co. 126
Sorensen Equip. Co. 171
Southwest Welding & Mfg. Co. 64
Sprayed Insulation, Inc. 171
Standard Oil Co. (California) 131
Standard Oil Co. (Indiana) 58
Standard Steel Works 53
Sterling Machinery Corp. 171
Sterling Wheelbarrow Co. 160
Symons Clamp & Mfg. Co. 171
Syntron Company 170

Tamblyn System 166
Texas Company 12, 13
Thermoid Company 129
Thew Shovel Co., The 39
Timken-Detroit Axle Co., The 62
Timken Roller Bearing Co., The ..... 4th Cover
Truck Mixer Mfrs. Bureau 50

Union Metal Mfg. Co., The 159
Union Wire Rope Company 18, 19
Unit Crane & Shovel Corp. 25
United States Steel Corp., Subsidiaries 111, 132
Universal Atlas Cement Co. 111
Universal Engineering Co. 141

Vulcan Iron Works 150

War Assets Administration 169
Wellman Engineering Co., The 152
Where to Buy Section 171
White Mfg. Co. 130
Whiteman Mfg. Co. 168
Wickwire Spencer Steel Div., Colorado Fuel & Iron Corp. 38
Wilson, K. R. 47
Worthington Pump & Machinery Corp. 142, 143

• There is a funny thing about using the longer-lasting LAY-SET Preformed Wire Rope. Not only do you buy wire rope less frequently (which saves money) but you probably get longer and better service from your sheaves and drums. That's because LAY-SET resists rotating, twisting and grinding as it bends. Because of that you don't have to re-tread sheave or drum grooves as often. There, of course, cutting down on the frequency of rope replacement means less-interrupted, steadier machine production, and Mister, that *really* is important. Specify Hazard LAY-SET Preformed of Improved Plow Steel.

ACCO Wilkes-Barre, Pa., Atlanta, Chicago, Denver, Houston, Los Angeles, New York, Philadelphia, Pittsburgh, Portland, San Francisco, Tacoma, Seattle, Bridgeport, Conn.

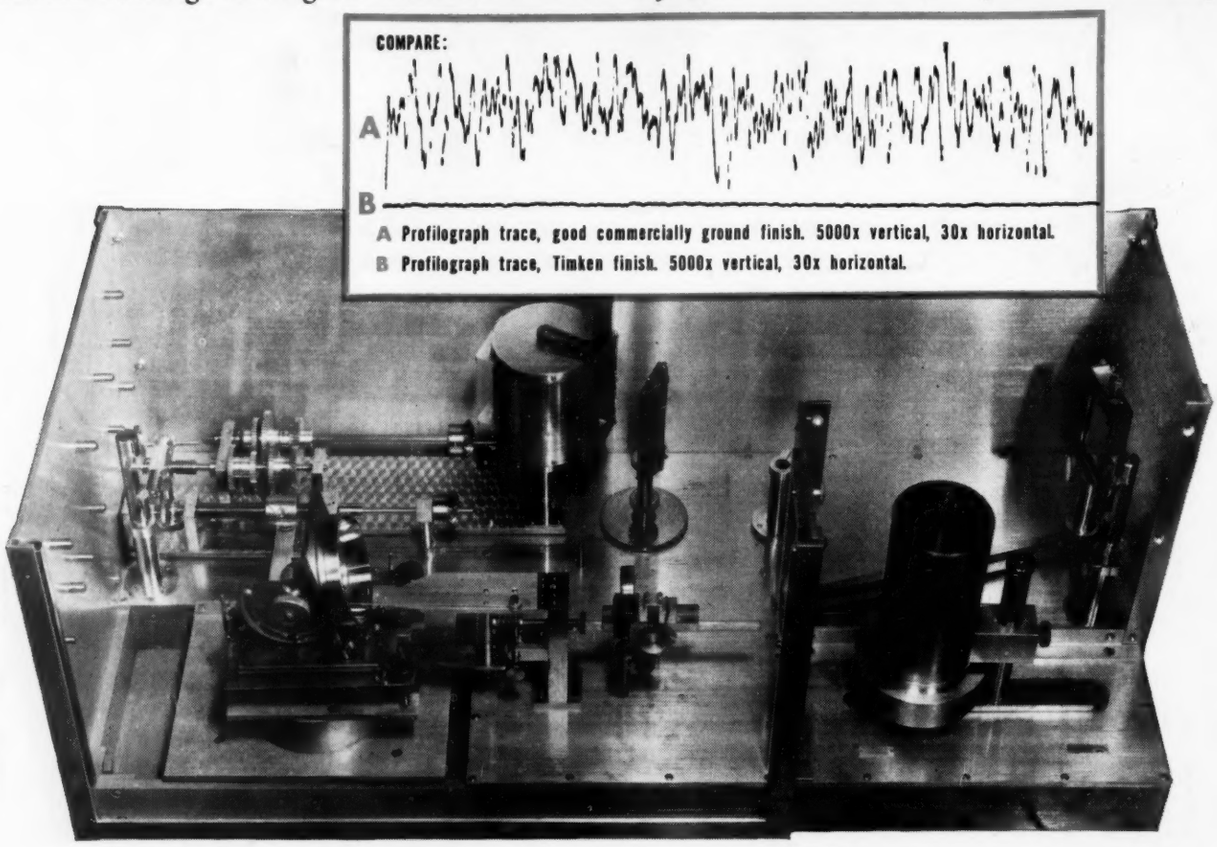
HAZARD WIRE ROPE DIVISION
AMERICAN CHAIN & CABLE

HAZARD WIRE ROPE 101 YEARS OLD 1846 • 1947

TRADE MARK

In Business for Your Safety

Timken bearings make good construction machinery better . . . here's one of the reasons why:


COMPARE:
A
B
A Profilograph trace, good commercially ground finish. 5000x vertical, 30x horizontal.
B Profilograph trace, Timken finish. 5000x vertical, 30x horizontal.

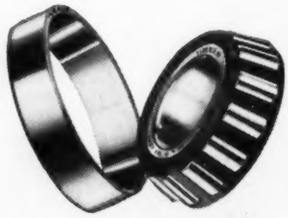
Answers the question— "How rough is smooth?"

ONE of the reasons Timken tapered roller bearings perform with such frictionless, wear-free ease is the amazingly smooth surface finish on the rolls and races —the finest known to modern bearing science.

Now, when you talk about finishes like this, you're talking about surface irregularities of only a few millionths of an inch—irregularities which are impossible to detect by any ordinary means. So, when Timken first began to develop this finish, one of the biggest obstacles was the absence of an accurate method of measuring the roughness of an apparently smooth surface.

The profilograph pictured above was the answer. Developed by Timken in 1928 and steadily improved since then, the profilograph determines surface irregularities to within one-millionth of an inch. Equipped with this measuring stick, Timken engineers were able to develop new finishing methods and machines, which have resulted in the microscopic surface accuracy of the Timken bearings you use today.

Every factor in the efficiency of a bearing is approached at Timken in this same scientific manner. For example, Timken makes its own steel to assure constant quality. And Timken is the acknowledged leader in: 1. advanced design; 2. precision manufacture; 3. rigid quality control; 4. special analysis steels. No wonder you can always be sure of uniformly top quality and performance in the Timken bearings you use. The Timken Roller Bearing Company, Canton 6, Ohio.



TIMKEN

TRADE-MARK REG. U. S. PAT. OFF.

TAPERED ROLLER BEARINGS

NOT JUST A BALL ○ NOT JUST A ROLLER ⬭ THE TIMKEN TAPERED ROLLER ⬭ BEARING TAKES RADIAL ⓪ AND THRUST →⓪← LOADS OR ANY COMBINATION ✳